W3000

USER MANUAL

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For software versions CA12

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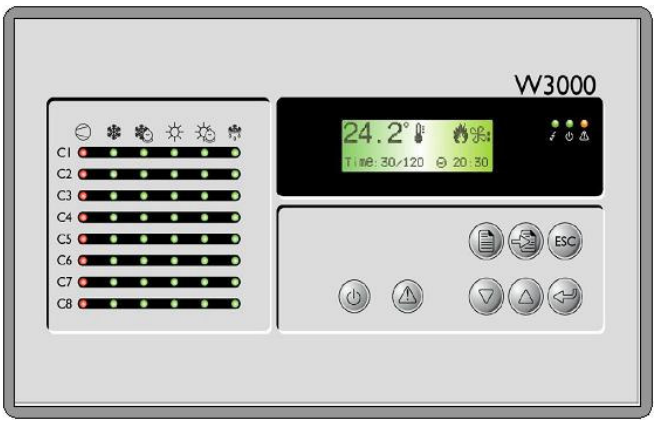
Notice: *The W3000 controller software is protected by a digital signature.*
This means that it can only work on boards supplied by Climaveneta and not on boards purchased from other dealers.

1 USER INTERFACE

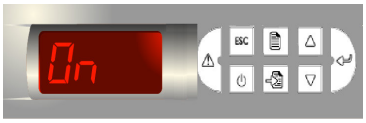
There are three types of user interface:

W3000



W3000 compact

W3000 base



Depending on the type of user interface installed, there are more or less keys available for controlling the unit and for accessing system information.

Key		Description
W3000, W3000 compact	**W3000 compact**	
	Prg	[MENU key]: accesses the main menu.
		[UP key]: moves around the masks and sets control parameter values
		[DOWN key]: moves around the masks and sets control parameter values
		[ENTER key]: confirms entered data.
ESC	Esc	[ESC key]: goes back one level in the mask tree if you are in the header masks, or returns to the unit controller.
		[ALARM key]: displays the alarms and resets normal operating conditions.
	---	[SETPOINT key]: directly accesses the setpoint menu.
	---	[ON/OFF key]: switches the machine on and off.

For each compressor, the following LED's are also located on the W3000 user interface:

Symbol	Colour	Description
	Green	If the LED shines steady the compressor is on, if it flashes the compressor is demanded
	Red	The compressor is blocked by a compressor or circuit alarm
	Green	The compressor is in the "chiller" mode
	Green	The circuit is in the "freecooling" mode
	Green	The compressor is in the "heat pump" mode
	Green	If the LED shines steady the circuit is in the "recovery mode", if it flashes there is a "recovery alarm"
	Green	If the LED shines steady the circuit is in the "defrost mode", if it flashes it is in the "drip mode"

1.1 Menu structure

The tree structures for moving around the various menus are shown below.

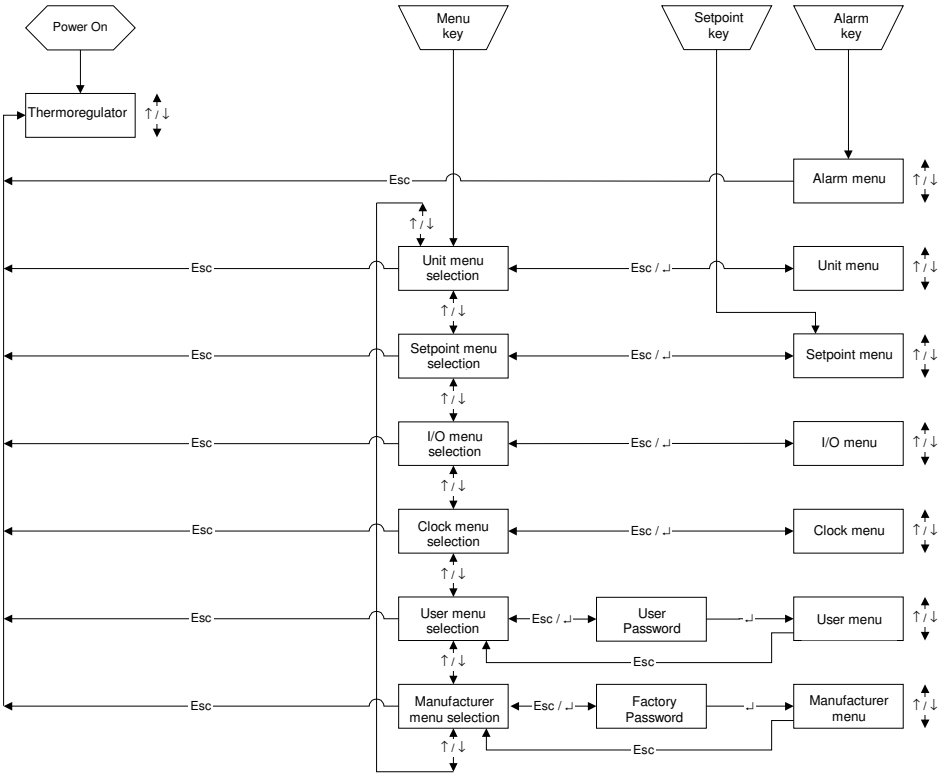


Figure 1.1: *menu tree for W3000-W3000 compact*

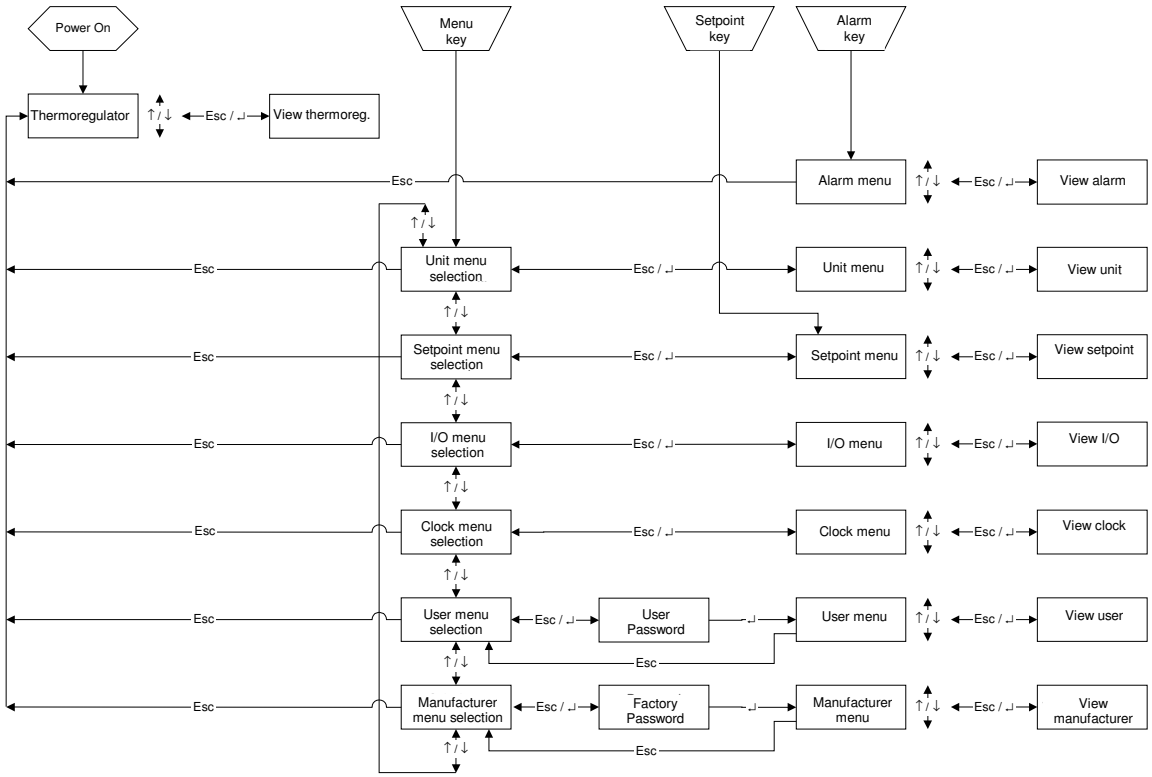


Figure 1.2: *menu tree for W3000 base*

The menus are briefly described below:

- The "Unit Menu" displays information such as temperature, pressure and circuit states.
- The "Setpoint menu" is used to set the setpoints for the various available functions. Different setpoints can be set depending on the available operating modes (chiller, heat pump and recovery). Dual setpoint values can also be set for chiller and heat pump operation (only if the digital input is fitted and the "dual setpoint" function is enabled in the "user menu").
- The "I/O menu" shows the status of the digital inputs and values read from the analogue inputs. It also shows the status of the digital outputs and the voltage supplied to the analogue outputs. If expansions are necessary (depending on the configuration parameters), the inputs and outputs of the latter are also shown.
- Parameters relative to user programming of the unit can be displayed and set in the "User menu".
- Unit configuration parameters can be displayed and set in the "manufacturer menu".
- The "Clock menu", if the clock board is present, is used to set and display the date and time and configure the time bands (except for W3000 base).

  After enabling time bands from the "enable time bands" parameter in the "user menu", time bands can be set and specific operating modes and different setpoints can be set according to requirements.
  Several time bands (up to 10) of different types (A, B, C and D) can be set during the day.
  Figure 1.3 shows an example: the beginning of the first time band is set at 00:00 and the end of the tenth time band is set at 23:59; the end of one time band determines the beginning of the following one.
  To use a smaller number of bands, set the time a band ends to the same time it begins, and that band will be ignored. Summer and winter setpoints and unit On/Off switching can be set for each time band. If the unit is switched Off, it will remain in the "Off from time bands" mode.

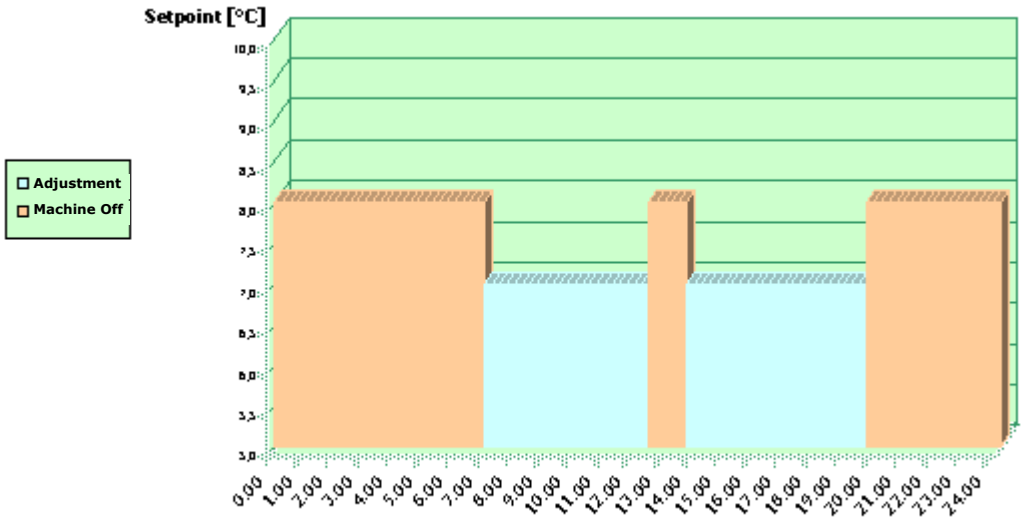


Figure 1.3: *example of setting time bands*

1.2 Switching the unit on and off

Caution: connect the unit to the power supply at least 8 hours before starting it; if this is not done, the guarantee will become null and void.

There are different procedures for starting or stopping the unit: using the user interface keys or selecting from the display. The following procedures have a priority. In the event of conflicts between different settings, the following priorities apply:

- highest priority:	on/off from keypad - on/off from parameter
	on/off from digital input
	on/off from time bands
- lowest priority:	on/off from protocol

using the [ON/OFF] key:

For W3000 and W3000 base

Proceed as follows:
- *SWITCHING ON:* press the [ON-OFF] key.
- *SWITCHING OFF:* press the [ON-OFF] key.

In the W3000, the message Com. : ON appears on the display
In the W3000 base, the message "On" appears on the display with the LED on, or "OFF" with the LED off.

using the On/Off parameter:

For W3000 and W3000 compact

The "Com: On/Off" parameter can be displayed on the user interface. "Off" means that the unit is switched off while "On" means that the unit is switched on.
Proceed as follows:
- *SWITCHING ON:* Move to the "On/Off" parameter by pressing [Enter] and then press [Up] or [Down] until "On" appears. Press [Enter] again to confirm. If "On" continues to be displayed it means that the unit has been switched on.
- *SWITCHING OFF:* Move to the "On/Off" parameter and change to "Off" using the same procedure used to switch the unit on. Press [Enter] again to confirm. If "Off" continues to be displayed it means that the unit has been switched on.

using the digital input:

Only if the digital input is fitted.

Open the "user menu" and check that the "On/Off enable from digital input" parameter is set to "Yes".
When the contact is open the unit is "Off", when the contact is closed the unit is "On".
Proceed as follows:
- *SWITCHING ON*: Close the remote On/Off contact. The "On from digital input" message appears in the main mask to show that the unit has been switched on.
- *SWITCHING OFF*: Open the remote On/Off contact. The "Off from digital input" message appears in the main mask to show that the unit has been switched off.

In the W3000 base the following procedure is used: press [MENU] / select the "User" menu using the [UP] or [DOWN] keys / press [ENTER] to access the menu / press enter to type in the password / press [UP] or [DOWN] to choose the password and [ENTER] to confirm / use the [UP] or [DOWN] keys to choose the "dI 0" (Enable from digital input) mask / press [ENTER] to view the current setting of the parameter ("Y" or "N") / press [ENTER] to modify the parameter (the display flashes) / press [UP] or [DOWN] to select one of the two alternatives.
Press the "digital input" button on the panel to switch the unit on and off.

using time bands:

For W3000 and W3000 compact (if the clock board is fitted)

Make sure that the "Clock board not installed" is not displayed in the "clock menu".
Check that the "Time bands enabled" parameter in the "user menu" is set to "Yes".

- *SWITCHING ON*: set the required switching on time in the "clock menu". The unit switches on when the set time is reached. The "On from time bands" message appears in the main mask to show that the unit has been switched on. N.B.: The unit does not switch on if it is set to "Off from keypad" or "Off from digital input".
- *SWITCHING OFF*: set the required switching off time in the "clock menu". The unit switches off when the set time is reached. The "Off from time bands" message appears in the main mask to show that the unit has been switched off.

using the supervision protocol:

Only if the serial board is fitted.

Check that the "Supervisor enable" and "On/Off enable from supervisor" parameters in the "user menu" are set to "Yes".
Proceed as follows:

- *SWITCHING ON*: Send the switching on command from the protocol. The "On from supervisor" message appears in the main mask to show that the unit has been switched on. N.B.: The unit does not switch on if it is set to "Off from keypad" or "Off from digital input".
- *SWITCHING OFF:* Send the switching off command from the protocol. The "Off from supervisor" message appears in the main mask to show that the unit has been switched off.

In the W3000 base the following procedure is used: press [MENU] / select the User menu using the [UP] or [DOWN] keys / press [ENTER] to access the menu / press enter to type in the password / press [UP] or [DOWN] to choose the password and [ENTER] to confirm / use the [UP] or [DOWN] keys to choose the "SPr" (Enable from supervisor) mask / press [ENTER] to view the current setting / press [ENTER] to see the display flashing / press [UP] or [DOWN] to modify the setting and press [ENTER] to confirm.

1.3 Setting the operating mode

Caution: Do not switch from chiller to heat pump unless the inlet temperature is above 15°C. Do not switch from heat pump to chiller unless the inlet water temperature is below 30°C.

There are various ways of setting the operating mode of the unit.
The set operating mode may be any one of the following, as long as they are compatible with the unit:

Operating mode		**Description**
	W3000 base	
chiller	ch	Chiller
chiller+rec		Chiller plus recovery
heatpump	hp	Heat pump
summer ch		Chiller in summer mode
summer ch+rec		Chiller plus recovery in summer mode
summer rec		Recovery in summer mode
recovery		Recovery only
summer auto		Automatic in summer mode
winter hp		Heat pump in winter mode
winter rec		Recovery in winter mode
winter auto		Automatic in winter mode
auto		Automatic

The following procedures have a priority: in the event of conflicts between opposing settings the following priorities apply:

- highest priority: change through parameter
  chiller/heat pump from digital input
  ch/ch+rec from digital input
- lowest priority: change through protocol

Using the parameter:

Make sure the unit is "Off". Access the "setpoint menu" and display the "Operating mode" parameter. Move to the "Operating mode" parameter by pressing [Enter] and modify the parameter by pressing [Up] or [Down]. Press [Enter] again to confirm. If the set message continues to be displayed it means that operating mode has been changed.

In the W3000 base the key sequence is: switch off the unit using the [ON/OFF] key / press the [setpoint] key / select MODE with the [UP] or [DOWN] keys / press [Enter] / press [Enter]. At this point the cursor flashes. Press the [UP] or [DOWN] keys to select either "ch"= chiller or "hp"= heat pump. Press [Enter] to confirm.

Using the digital input:

Only for heat pump units and only if the digital input is present.

Check that the "Chiller/Hp enable from digital input" parameter in the "user menu" is set to "Yes".
When the contact is open the unit is in the "heat pump" mode, when the contact is closed the unit is in the "chiller" mode. Switching the digital input switches the unit off, changes the operating mode and switches the unit on again.
In the W3000 base access the "user menu" / select "DI S" by pressing the [UP or DOWN] key/ press [Enter] to view the current setting / press [Enter] to see the current setting flashing and change it using the [UP or DOWN] key / press [Enter] to confirm the new setting.

Using the recovery from digital input command:

Only for "chiller plus recovery" units and only if the digital input is present. This mode is not present in the W3000 base.

Proceed as follows: check that the "Recovery control enable from digital input" parameter in the "Recovery menu" is set to "Yes".
When the contact is open the unit is in the "chiller+rec" mode, when the contact is closed the unit is in the "chiller" mode. Switching the digital input switches the unit off, changes the operating mode and switches the unit on again.

Using the supervision protocol:

Only applicable if the serial board is fitted.
Check that the "Supervisor enable" and "Enable operating mode from supervisor" parameters in the "user menu" are set to "Yes".
Make sure the unit is "Off". Send the change operating mode command from the protocol. The operating mode only changes if the unit is switched off.
In the W3000 base press [ON/OFF] to switch the unit off. Access the "user menu" / press [UP] or [DOWN] to select "SV M"/ press [Enter] to view the set mode / press [Enter] to see the setting flashing / press [UP] or [DOWN] to modify the setting / press [Enter] to confirm the new setting.
Send the change operating mode command from the protocol. The operating mode only changes if the unit is switched off.

1.4 Setting adjustment methods

Depending on the type of compressor used, various adjustment methods may be selected.

Compressor	Unit	Adjustment method
Hermetic	Water/water heat pump Water/water chiller Evaporating units Water/air heat pump Water/air chiller	• *Quick Mind on outlet probe* • *Quick Mind on inlet probe* • *Proportional step on inlet probe* • *Proportional step on inlet probe + integral on inlet probe*
	Chiller with free-cooling Energy Raiser Heat pump with heat recovery Chiller with heat recovery	• *Proportional step on inlet probe* • *Proportional step on inlet probe + integral on inlet probe*
Alternative	Chiller with free-cooling Energy Raiser Heat pump with recovery Chiller with heat recovery Water/water heat pump Water/water chiller Evaporating units Water/air heat pump Water/air chiller	• *Proportional step on inlet probe* • *Proportional step on inlet probe + integral on inlet probe*
Screw	Water/water heat pump Water/water chiller Evaporating units Water/air heat pump Water/air chiller	• *Modulating on outlet probe* • *Proportional step on inlet probe* • *Proportional step on inlet probe + integral on inlet probe*
	Chiller with free-cooling Energy Raiser Heat pump with recovery Chiller with heat recovery	• *Proportional step on inlet probe* • *Proportional step on inlet probe + integral on inlet probe*
Centrifuge	Water/water chiller Water/air chiller	• *Proportional on inlet probe + integral on outlet probe*

Table 1.1: *adjustment methods available by compressor type*

The various adjustment methods are described below.

1.4.1 Proportional step adjustment on inlet probe

Some examples of proportional "step" adjustment on the inlet temperature probe:

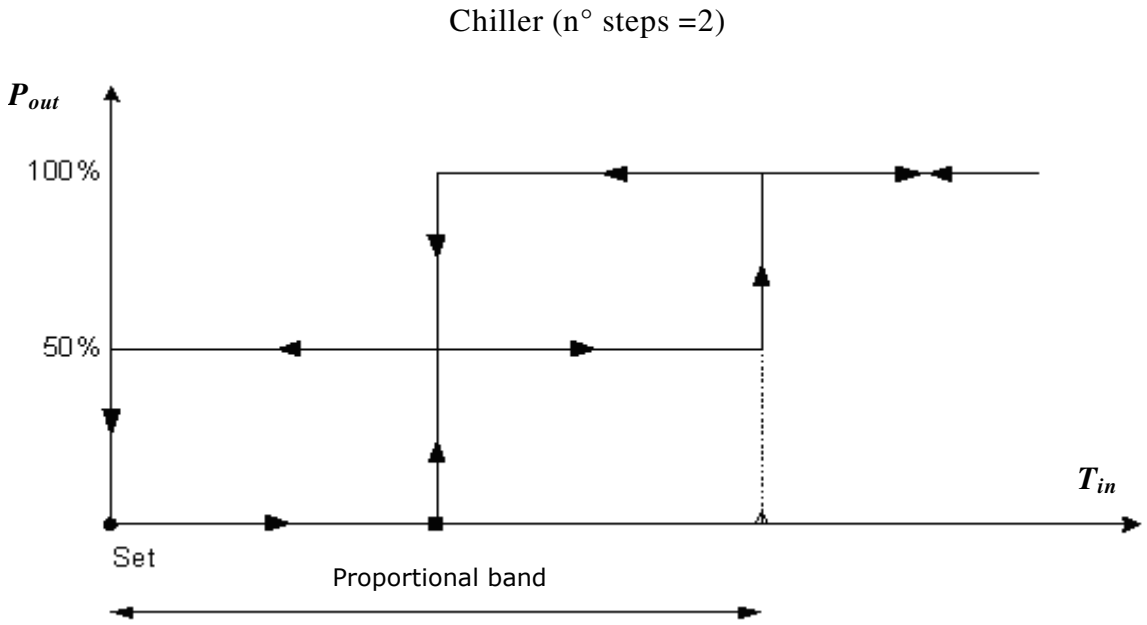


Figure 1.4: *T_{in} is the inlet variable, P_{out} is the percentage of delivered power (chiller).*
■ *= Set + proportional band/2*

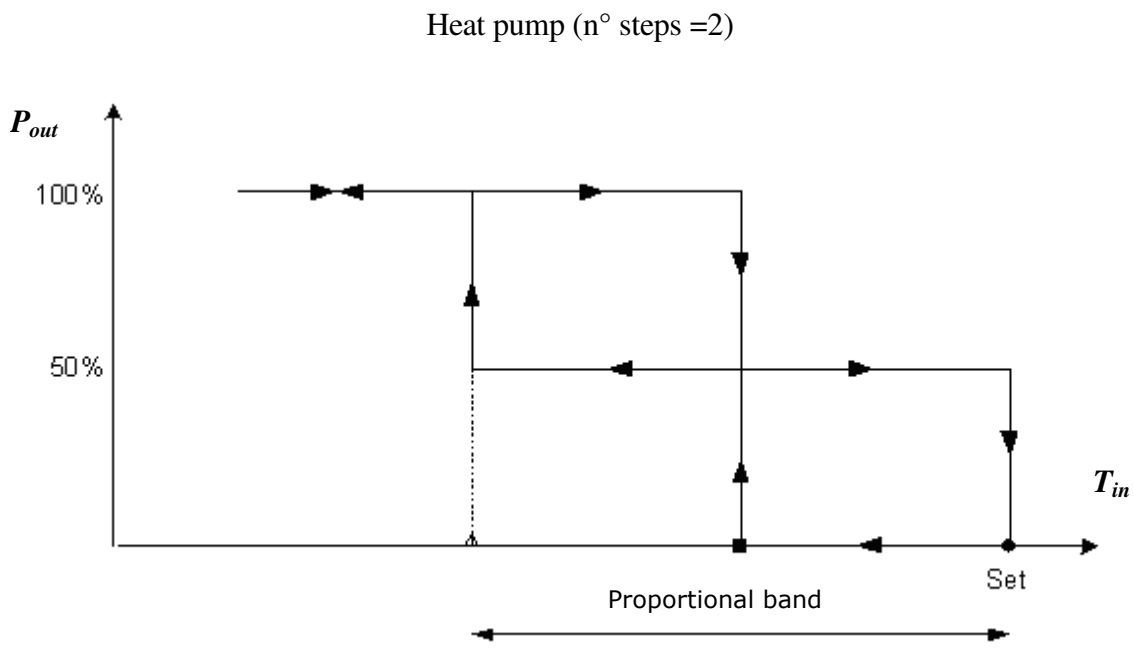


Figure 1.5: *T_{in} is the inlet variable, P_{out} is the percentage of delivered power (heat pump).*
■ *= Set + proportional band/2*

The following *tables* show some typical values for the parameters in question. The theoretical maximum and minimum outlet temperature values refer to operation at nominal flow rates (with a thermal head at the evaporator of 5 °C and sufficient water in the system to ensure a litre / KW ratio equal to or greater than 7).

N° steps	Setpoint (°C)	Proportional band (°C)	Theor. min. outlet T (°C)	Theor. max. outlet T (°C)
2	9.5	2.5	5.7	10.8
4	7	5	5.7	8.3

Table 1.2: *normal setpoint and proportional band values according to the number of steps (chiller).*

N° steps	Setpoint (°C)	Proportional band (°C)	Theor. min. outlet T (°C)	Theor. max. outlet T (°C)
2	42.5	2.5	41.2	46.3
4	45	5	43.7	46.3

Table 1.3: *normal setpoint and proportional band values according to the number of steps (heat pump).*

1.4.2 Proportional step adjustment on inlet probe + integral on inlet probe

This adjustment method is based on the sum of two components: proportional and integral.
The proportional component generates the percentage demand for activating/deactivating the steps, as illustrated in the previous paragraph "Proportional step adjustment on inlet probe".
The integral component adds the integral error to the proportional component at regular intervals (integral time: parameter 39.06). The integral error is calculated according to the following formula:

$$\text{Integral error} = \frac{\text{Inlet temperature} - \text{Set point}}{\text{Proportional band}} \times 100 \quad [\%]$$

However, the integral component is limited (integral limit: parameter 39.07) to prevent the adjustment from becoming unstable.

If the inlet temperature varies by 5% or more in one second, a rapid change, therefore, the integral component is not calculated.

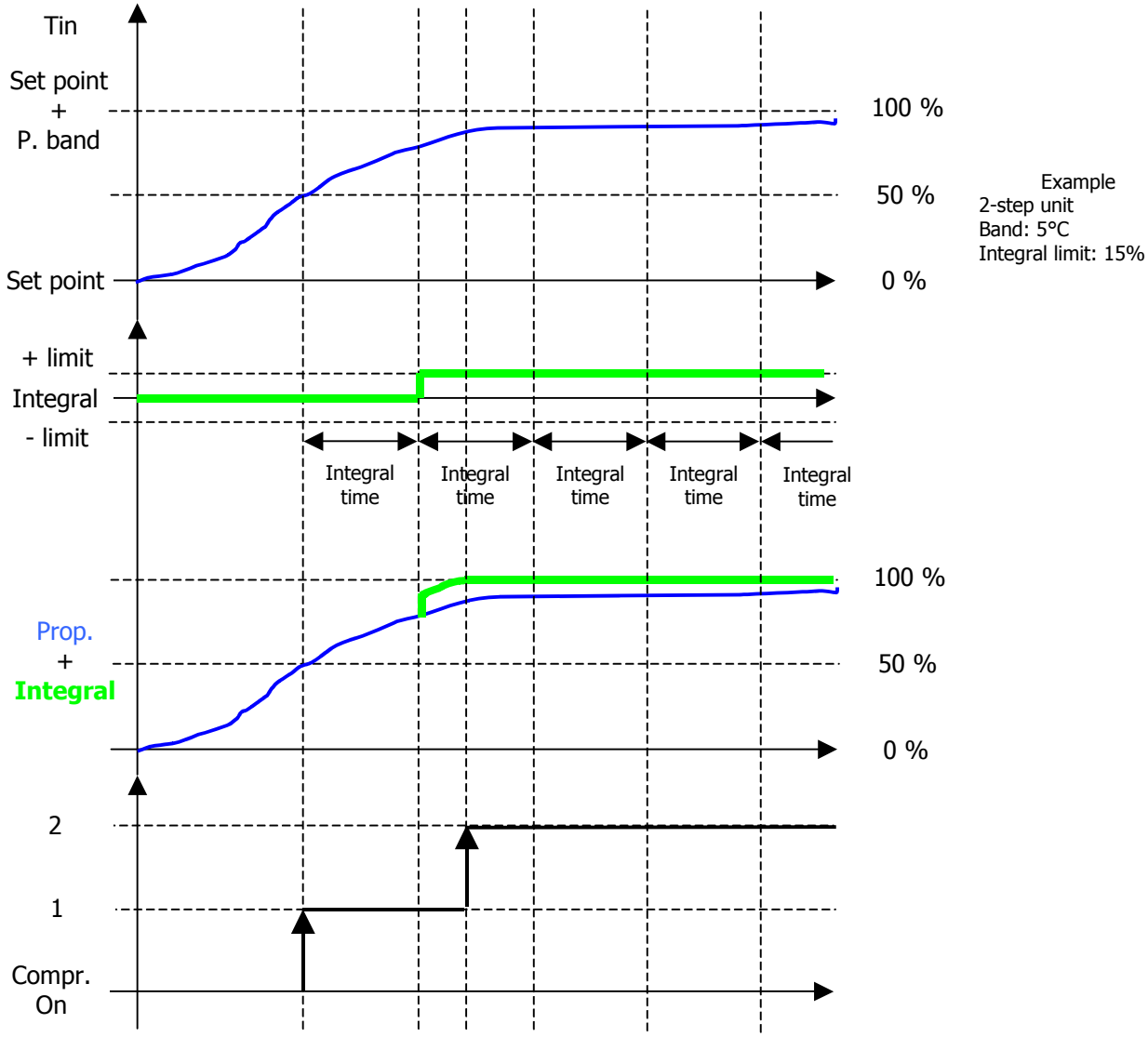


Fig 1.6 Example of a 2 step adjustment in the chiller mode

1.4.3 Quick mind adjustment

Users only need set the required setpoint as the other parameters are adapted to the system by the Quick Mind algorithm. The values normally used are:

SET POINT Chiller on inlet	11.0 °C
SET POINT Chiller on outlet	7.0 °C
SET POINT Heat pump on inlet	42.5 °C
SET POINT Heat pump on outlet	45.0 °C

QUICK MIND is a self-adapting algorithm for adjusting the temperature of the water treated by an all-in-one unit. The following *figure* shows how this adjustment is made:

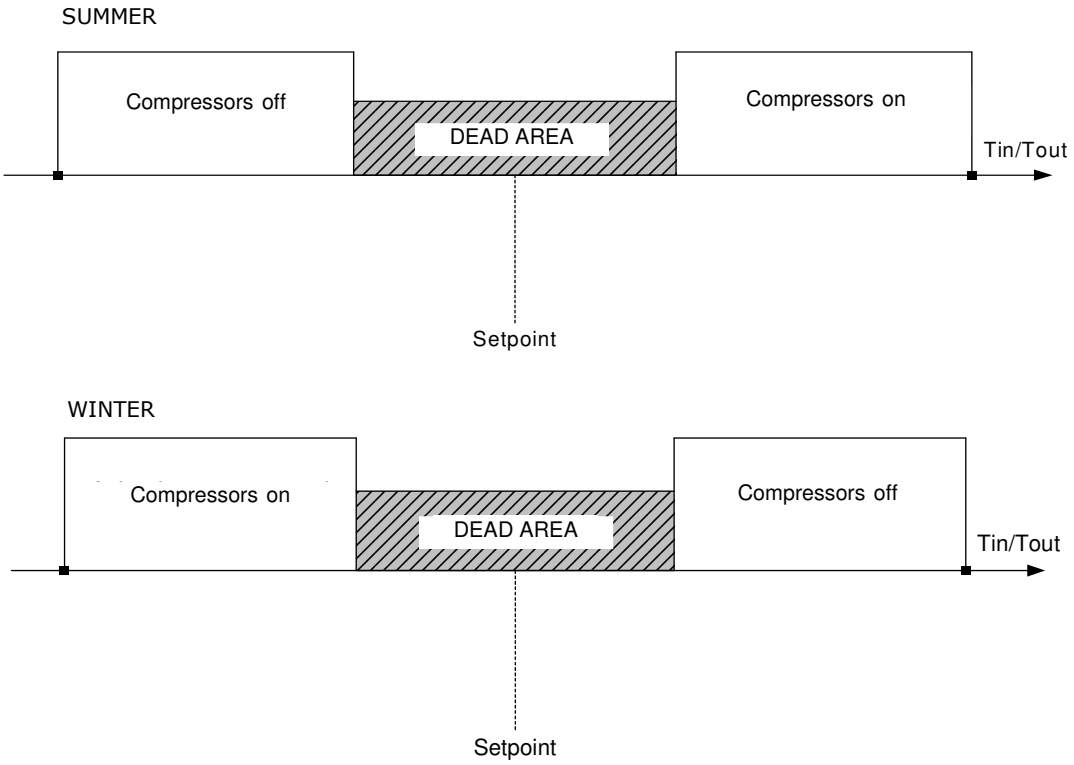


Figure 1.7*: QUICK MIND adjustment model (chiller and heat pump*)

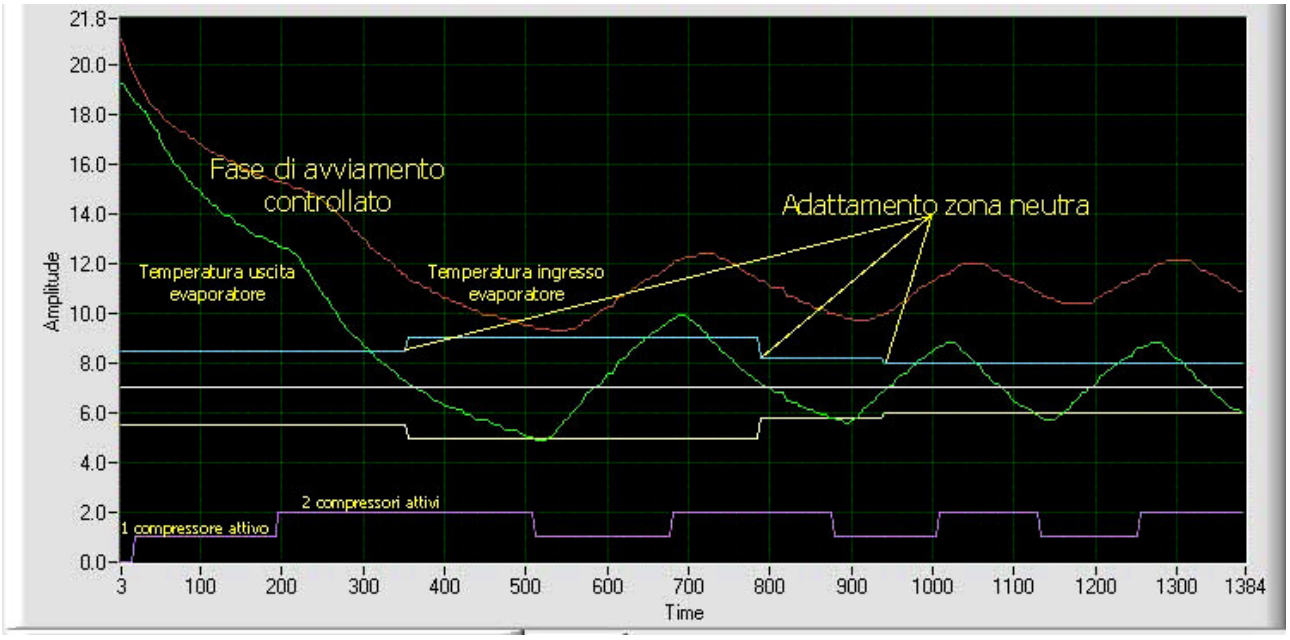
The setpoint remains within a dead area. If the temperature also remains within this area, no change is made to the number of active compressors.
When the temperature leaves the dead area following a change in system load, the compressors are either activated or deactivated in order to return the temperature to the dead area.
The amplitude of the neutral zone depends on the dynamic characteristics of the system and, in particular, on the amount of water it contains and the load. The self-adapting algorithm is able to "measure" system dynamics and calculate the minimum dead area in order to respect compressor activation times and the maximum number of start-ups per hour.
Both return and delivery temperatures can be adjusted.

Special functions are also present which reduce the number of compressor start-ups in the event of very low loads or start-ups of units with significantly higher or lower temperatures than the setpoint.

2 compressors - with maximum permitted number of start-ups per hour 8									
Litres/kW	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
Δ Tout	3.2	3.2	3.4	3.4	3.6	3.8	4.0	4.4	5.2
2 compressors - with maximum permitted number of start-ups per hour 12									
Litres/kW	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
Δ Tout	3.0	3.0	3.0	3.2	3.2	3.4	3.6	3.8	4.3
4 compressors - with maximum permitted number of start-ups per hour 8									
Litres/kW	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
Δ Tout	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.3	2.7
4 compressors - with maximum permitted number of start-ups per hour 12									
Litres/kW	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
Δ Tout	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.3	2.7

Table 1.4: *maximum theoretical delivery temperature range at constant part load (depending on the quantity of water contained in the system)*

An example of real data acquired during operation with the Quick Mind adjuster on the delivery side is shown below.
Reference is made to the following figure:



Fase di avviamento controllato = Controlled start-up phase
Adattamento zona neutra = Adaptation to dead area
Temperatura uscita evaporatore = Evaporator outlet temperature
Temperatura ingresso evaporatore = Evaporator inlet temperature
1 compressore attivo = 1 compressor active
2 compressori attivi = 2 compressors active

Figure 1.8: *example of real data with quick-mind outlet adjustment (x-axis: time in [s]; y-axis: Tout in [°C]).*

This is an example of start-up with a very high initial temperature compared with the setpoint (7°C). About 10 seconds after data acquisition began, one compressor switches on. The second compressor does not switch on immediately as the algorithm which handles start-up checks if one compressor is enough to return delivery temperature to the setpoint and avoid unnecessary start-ups. As the delivery temperature is still at 12 °C after about 200 seconds, the second compressor is also switched on, otherwise it would take too long to reach setpoint.
Following the controlled starting phase, the delivery temperature falls until it "enters" the dead area. The algorithm (at t= 350 s) begins to adapt the amplitude of the dead area in order to respect compressor safety times. As can be seen, the dead area is later reduced (t= 780 s, 950 s) to the absolute minimum amplitude which allows safety times to be respected. It can also be seen that the compressors are

activated and deactivated when the outlet temperature reaches the upper or lower limits of the dead area. The example shows that outlet temperature varies by about 3.5 °C during regular operation.

1.4.4 Modulating adjustment of screw compressors

With screw compressors, modulating adjustment is performed on the outlet probe.
Modulating adjustment is only available on "Bitzer" screw compressors.

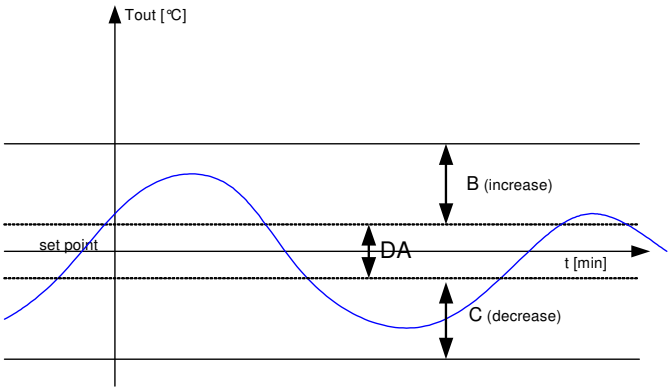


Figure 1.9: modulating adjustment for screw compressors

Reference is made to the *figure to the left:*
The setpoint remains within a dead area. If the temperature also remains within this zone, no change is made to the number of active compressors or their load percentages (position of modulating chamber).
When the temperature rises above zone B following a change in the system load, the compressors are activated in order to return the temperature to the dead area.
Inside zone B, if the outlet temperature derivative is positive, compressor power is increased in order to return the temperature to the dead area (ZN). The further away the temperature is from the set point, the greater the increase is.

When the temperature falls below zone C following a change in the system load, the compressors are either deactivated in order to return the temperature to the dead area.
Inside zone C, if the outlet temperature derivative is negative, compressor power is decreased in order to return the temperature to the dead area (ZN). The further away the temperature is from the set point, the greater the decrease is.
The amplitude of the neutral zone depends on the dynamic characteristics of the system and, in particular, on the amount of water it contains and the load. The self-adapting algorithm is able to "measure" system dynamics and calculate the minimum dead area in order to respect compressor activation times and the maximum number of start-ups per hour.
When a second or subsequent compressor is switched on, the ones that are already running are forced to a minimum, and the subsequent power increases/decreases are applied to all the compressors.

1.4.5 Adjustment method for centrifuge compressors

Adjustment is combined on the inlet temperature and integral on the outlet temperature.
Some diagrams outlining how this works are shown below.

Suppose we have a single compressor unit.

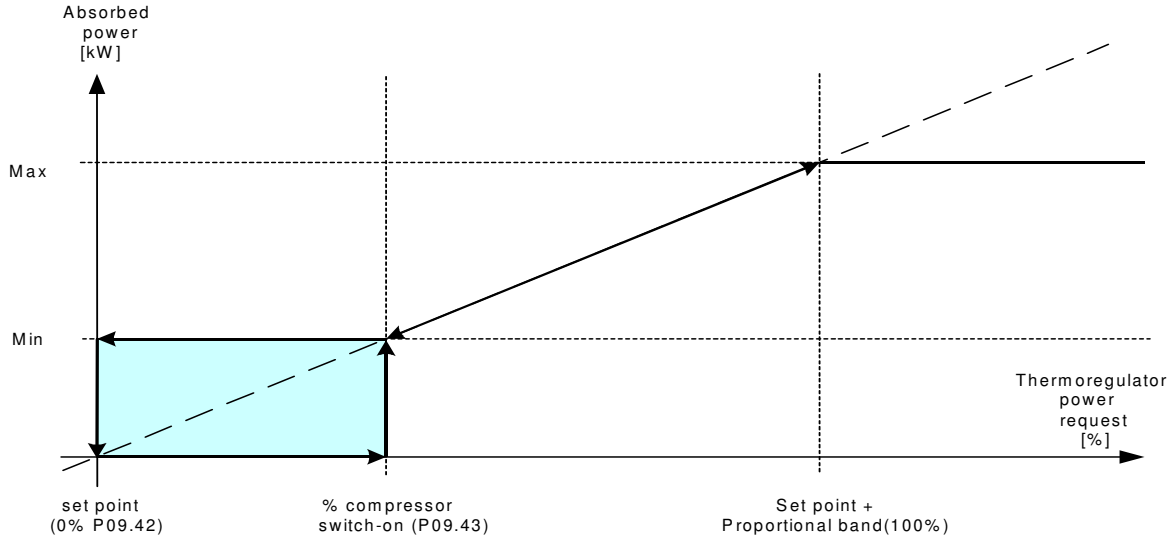


Figure 1.10: *Adjustment for a single-compressor unit. Min=theoretical minimum electrical power absorbed by a compressor, Max=theoretical maximum electrical power absorbed by a compressor*

Let us take a close look at how the compressor is activated.
When the system return temperature lies in zone A (figure 1.11a) or less than the setpoint, the compressor is off. The amplitude of zone A normally coincides with the temperature difference at the evaporator with the compressor running at minimum power.
When the return temperature exceeds zone A (figure 1.11b), the compressor is switched on and then switches off if the temperature falls below the setpoint.
If the return temperature lies in zone B (figure 1.11c), the power of the compressor is modulated according to system requirements.

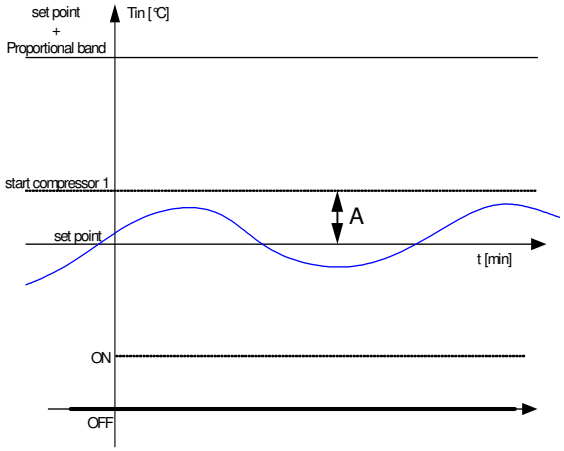


Figure 1.11a

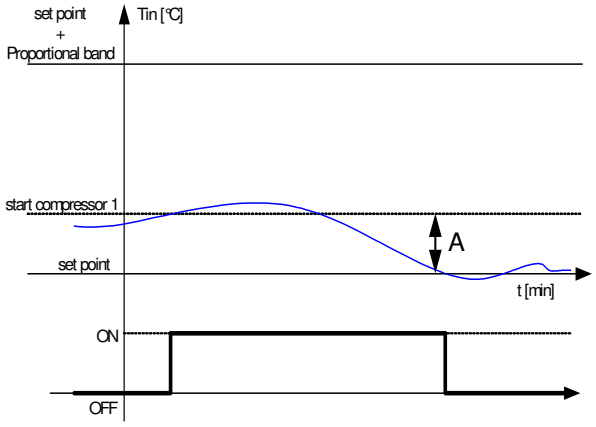


Figure 1.11b

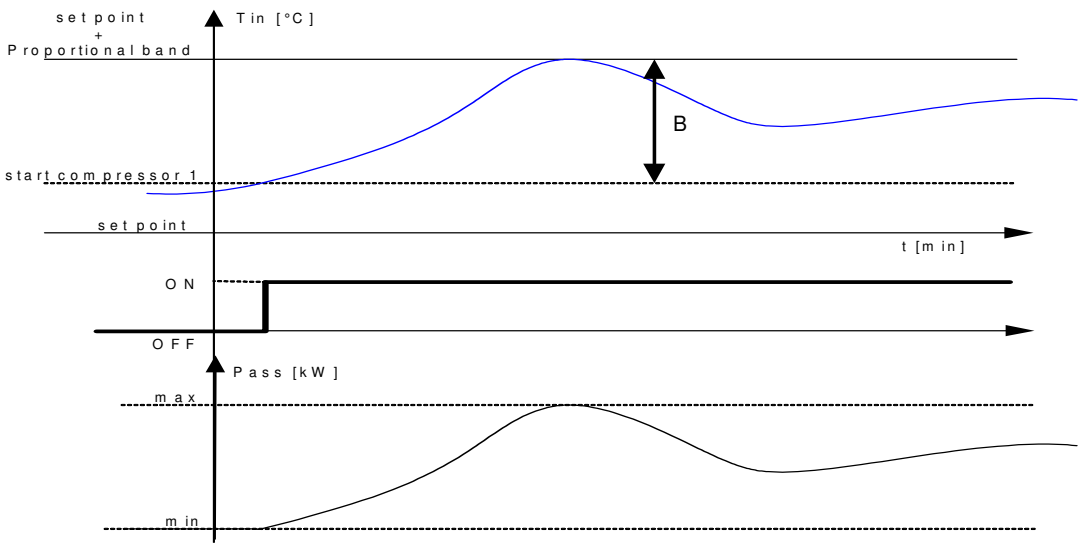


Figure 1.11c

Suppose we have a unit with more than one compressor.

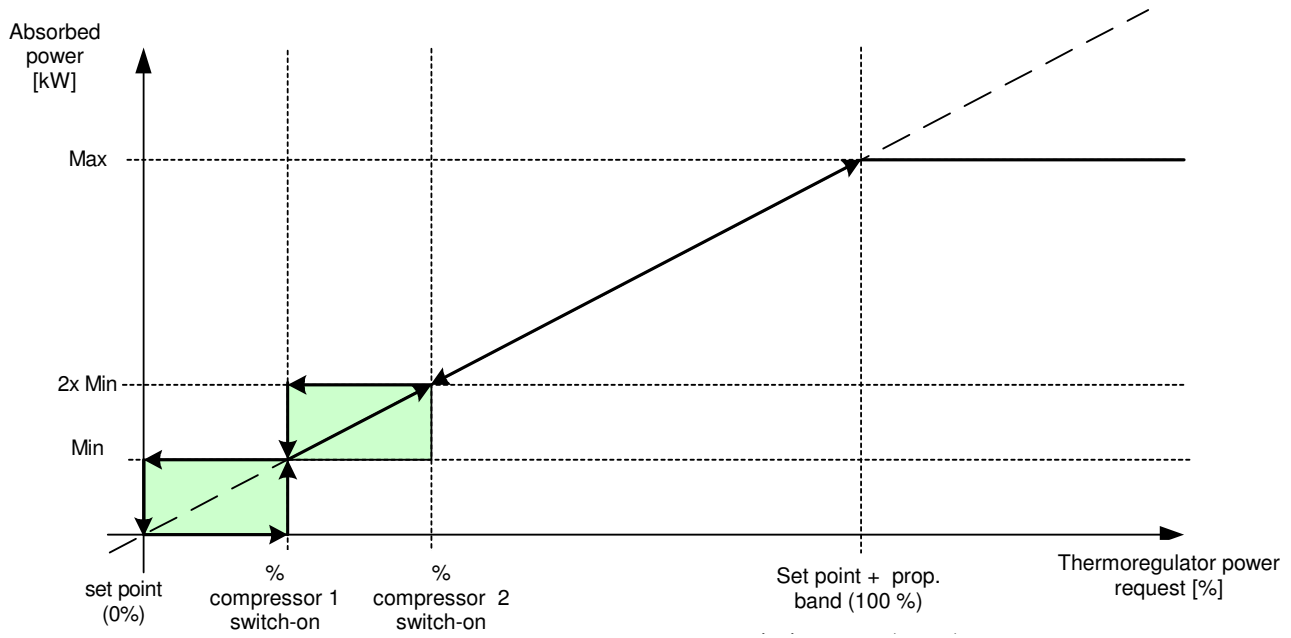


Figure 1.12: *Adjustment for a twin-compressor unit. Min=theoretical minimum electrical power absorbed by a compressor, Max=theoretical maximum electrical power absorbed by a compressor.*

Let us take a close look at how the compressor is activated.
The amplitude of zone A coincides with the temperature difference at the evaporator, with all the compressors running at minimum power.
Zone A is the sum of the zones of each single compressor (A1+A2+…).
When the temperature lies in one of the An zones, the power of the active compressors is modulated according to system requirements.
When moving from an An zone to the one just above it, the active compressors are taken to minimum power while waiting for the next one to be switched on. After that, they continue to be modulated in the new zone.
When moving from an An zone to the one just below it, one of the compressors is switched off while the others are kept at a minimum.

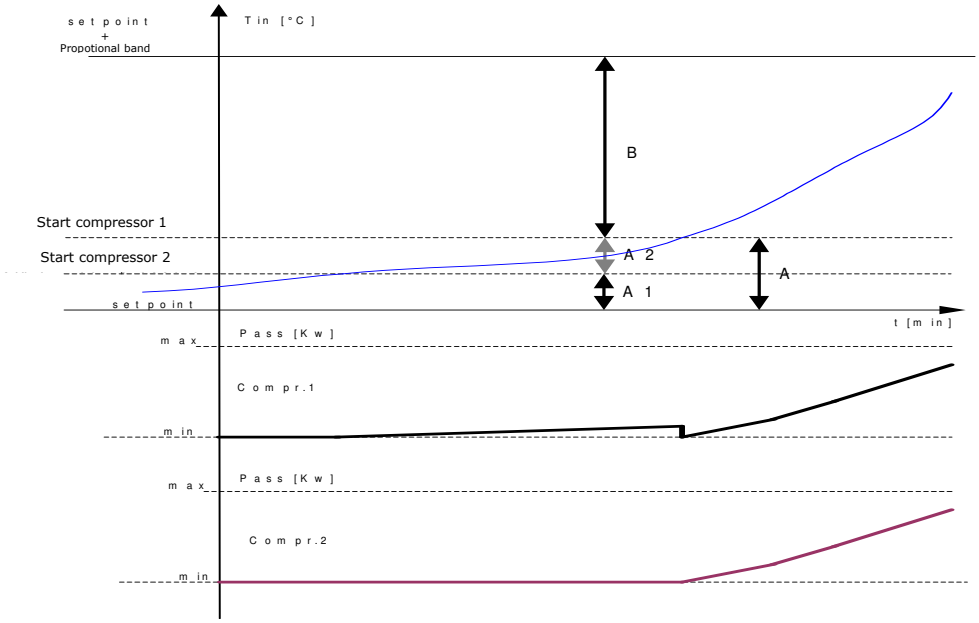


Figure 1.13: *adjustment for a twin-compressor unit*

The following figure, instead, gives an example of the integral contribution of the adjustment method.

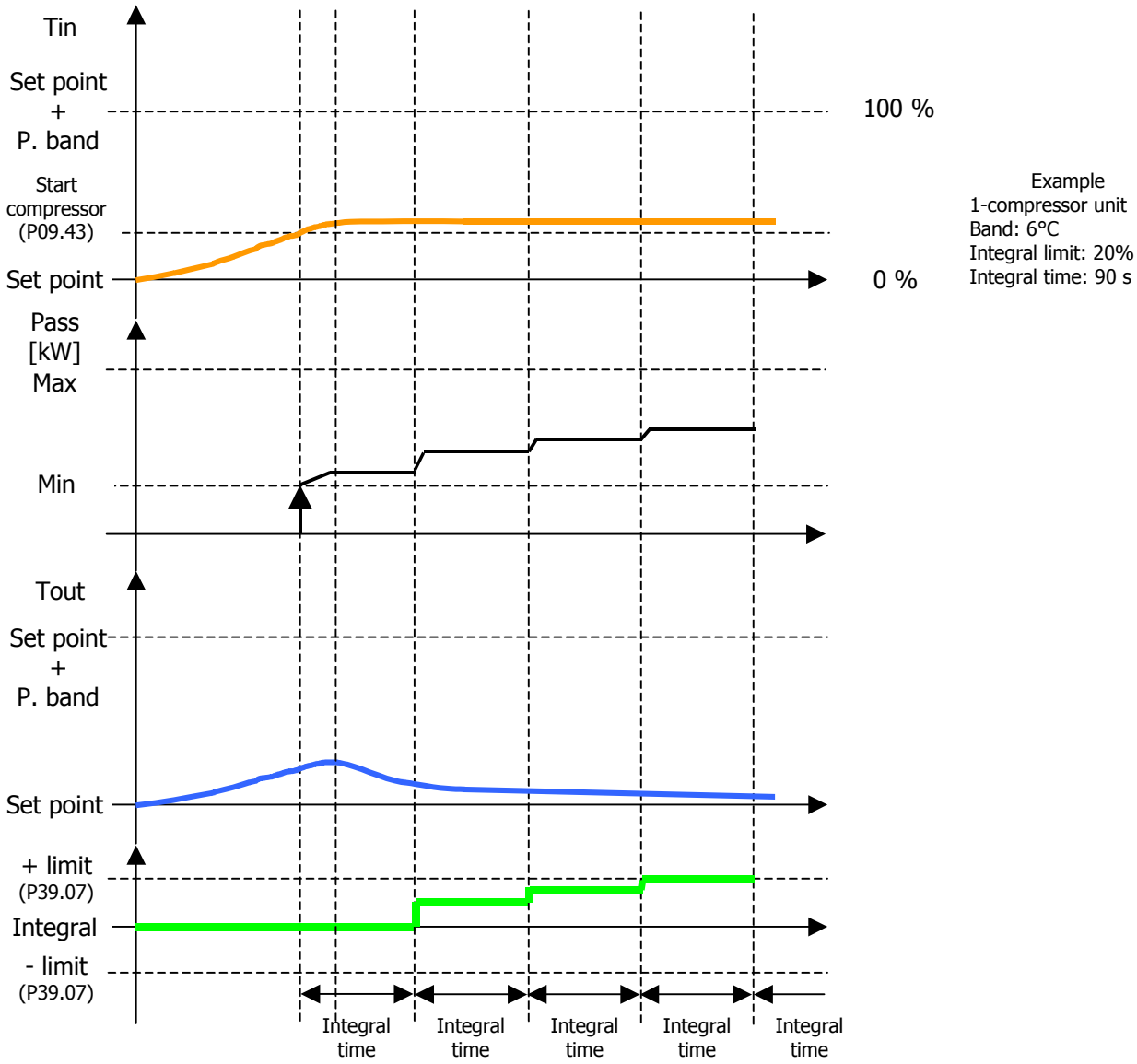


Figure 1.14: *Adjustment for a single-compressor unit: integral contribution*

2 ALARMS

Press the [ALARM] key once to enter the "alarms menu" and view the alarm message along with its code. If there is more than one alarm, scroll the menu using the [UP] and [DOWN] keys.
In the W3000 base, "NO A" is displayed if there is no alarm, otherwise the alarm code appears.
Press any other key to exit from this menu.

To reset the alarm press the [ALARM] key again and hold it down until the message "No Alarm Active" (for W3000 or W3000 compact) or "No A" (for W3000 base) appears. If the message does not appear it means that one or more alarm conditions are still active.

Alarms table

ALARM	DESCRIPTION	details	RESET
002	*Phase sequence / Voltage out of range*	*Faulty phase connection. Totally shuts down the unit (only displayed if the input that detects it is fitted)*	A
003	*Evaporator flow switch*	*No flow to evaporator. The alarms automatically resets 3 times in the same hour if flow is restored within the maximum operating time of the pumps with a small amount of water (P23.34), otherwise, it must be reset manually*	A/M
005	*Low inlet temperature*	*Enabled only in the "heat pump" mode. Low water temperature at evaporator inlet.*	S-A
006	*High inlet temperature*	*Enabled only in the "chiller" mode. High water temperature at evaporator inlet.*	S-A
010	*Evaporator antifreeze*	*Low water temperature at evaporator outlet. Also specifies (except for W3000 base) which evaporator (if more than one) is involved in the alarm condition.*	M
014	*Insufficient system pressure*	*Only displayed if the relative input is present (see I/O menu). Unit stops due to an external pressure switch.*	M
021	*Low water charge*	*The evaporator inlet temperature changes too quickly and creates a low water level in the system.*	S
022	*Low water flow*	*The temperature difference between the evaporator inlet and outlet is too high and creates a low water flow from the pump*	M
023	*High water flow*	*The temperature difference between the evaporator inlet and outlet is too low and creates a high water flow from the pump*	S
045	*Condenser flow switch*	*Similarly to "Evaporator flow switch" (only for water/water units with freon reversal).*	A/M
046	*Recuperator flow switch*	*No water flow to the recuperator.*	A
051	*Pump 1 maintenance*	*Maintenance hours limit exceeded (in units with just 1 pump, pump 1 is the evaporator pump)*	S
052	*Pump 2 maintenance*	*Pump 2 maintenance hours limit exceeded (in units with more than one pump).*	S
075	*Condenser antifreeze*	*Low water temperature at condenser outlet. Except for W3000 base, it also specifies which condenser (if more than one) is involved in the alarm condition (only for water/water units with freon reversal).*	M
076	*Recuperator antifreeze*	*Low water temperature at recuperator outlet.*	A
081	*Pump 1 thermal switch*	*Pump 1 overheated (in units with just 1 pump, pump 1 = evaporator pump)*	M
082	*Pump 2 thermal switch*	*Pump 2 overheated (in units with more than one pump).*	M
085	*Condenser pump thermal switch*	*Condenser pump overheated (only for water/water units with freon reversal)*	M
086	*Recuperator pump thermal protection*	*Recuperator pump overheated*	M

087	*Glycol pump thermal switch*	*Glycol pump overheated (in units with freecooling).*	S/A
091	*Expansion 1 no-link*	*Master expansion 1 unlinked. Apart from W3000 base, the word master appears in units with 3 or 4 circuits.*	A
092	*Expansion 2 no-link*	*"as above, for expansion 2"*	A
093	*Expansion 3 no-link*	*"as above, for expansion 3"*	A
094	*Expansion 4 no-link*	*"as above, for expansion 4"*	A
095	*Expansion 5 no-link*	*"as above, for expansion 5"*	A
101	*Expansion 1 slave no-link*	*Slave expansion 1 unlinked.*	A
102	*Expansion 2 slave no-link*	*"as above, for expansion 2"*	A
103	*Expansion 3 slave no-link*	*"as above, for expansion 3"*	A
104	*Expansion 4 slave no-link*	*"as above, for expansion 4"*	A
105	*Expansion 5 slave no-link*	*"as above, for expansion 5"*	A
111	*Compressor 1 oil*	*No oil on compressor 1 due to low compressor oil level or pressure*	M
112	*Compressor 2 oil*	*"as above, for compressor 2"*	M
113	*Compressor 3 oil*	*"as above, for compressor 3"*	M
114	*Compressor 4 oil*	*"as above, for compressor 4"*	M
121	*High outlet temperature compressor 1*	*Compressor 1 delivery temperature is higher than the set limit.*	M
122	*High outlet temperature compressor 2*	*"as above, for compressor 2"*	M
123	*High outlet temperature compressor 3*	*"as above, for compressor 3"*	M
124	*High outlet temperature compressor 4*	*"as above, for compressor 4"*	M
131	*Compressor 1 fault*	*Compressor 1 motor overheated or any another fault*	M - A/M
132	*Compressor 2 fault*	*"as above, for compressor 2"*	M - A/M
133	*Compressor 3 fault*	*"as above, for compressor 3"*	M - A/M
134	*Compressor 4 fault*	*"as above, for compressor 4"*	M - A/M
141	*Compressor 1 offline*	*No communication with compressor n°1 (only for units with centrifuge compressors)*	A
142	*Compressor 2 offline*	*"as above, for compressor 2"*	A
143	*Compressor 3 offline*	*"as above, for compressor 3"*	A
144	*Compressor 4 offline*	*"as above, for compressor 4"*	A
151	*Compressor 1 maintenance*	*Maintenance hours limit exceeded on compressor 1*	S
152	*Compressor 2 maintenance*	*"as above, for compressor 2"*	S
153	*Compressor 3 maintenance*	*"as above, for compressor 3"*	S
154	*Compressor 4 maintenance*	*"as above, for compressor 4"*	S
171	*Compressor 1 start-up timeout*	*Compressor 1 did not start within the set timeout (only for units with centrifuge compressors)*	A/M
172	*Compressor 2 start-up timeout*	*"as above, for compressor 2"*	A/M
173	*Compressor 3 start-up timeout*	*"as above, for compressor 3"*	A/M
174	*Compressor 4 start-up timeout*	*"as above, for compressor 4"*	A/M
211	*Circuit 1 high pressure*	*High pressure on cooling circuit 1*	M
212	*Circuit 2 high pressure*	*"as above, for circuit 2"*	M
213	*Circuit 3 high pressure*	*"as above, for circuit 3"*	M
214	*Circuit 4 high pressure*	*"as above, for circuit 4"*	M
221	*Circuit 1 fan thermal protection*	*One of the condensation fans in circuit 1 overheated and stopped.*	M
222	*Circuit 2 fan thermal protection*	*"as above, for circuit 2"*	M
223	*Circuit 3 fan thermal protection*	*"as above, for circuit 3"*	M
224	*Circuit 4 fan thermal protection*	*"as above, for circuit 4"*	M
231	*Circuit 1 low pressure*	*Low pressure detected by the transducer/pressure switch on circuit 1*	A/M
232	*Circuit 2 low pressure*	*"as above, for circuit 2"*	A/M
233	*Circuit 3 low pressure*	*"as above, for circuit 3"*	A/M
234	*Circuit 4 low pressure*	*"as above, for circuit 4"*	A/M
241	*Transducer 1 high pressure*	*High pressure detected by the transducer/pressure switch on cooling circuit 1*	M
242	*Transducer 2 high pressure*	*"as above, for circuit 2"*	M
243	*Transducer 3 high pressure*	*"as above, for circuit 3"*	M
244	*Transducer 4 high pressure*	*"as above, for circuit 4"*	M
251	*Circuit 1 start-up timeout*	*Possible start-up attempt with no Freon in circuit 1.*	A

252	*Circuit 2 start-up timeout*	*“as above, for circuit 2”*	A
253	*Circuit 3 start-up timeout*	*“as above, for circuit 3”*	A
254	*Circuit 4 start-up timeout*	*“as above, for circuit 4”*	A
261	*No freon in circuit 1*	*Possible Freon leakage in circuit 1 as the “Start-up timeout” alarm has continued for at least 8 hours.*	A
262	*No freon in circuit 2*	*“as above, for circuit 2”*	A
263	*No freon in circuit 3*	*“as above, for circuit 3”*	A
264	*No freon in circuit 4*	*“as above, for circuit 4”*	A
271	*Finned coil in circuit 1*	*Circuit 1 condensation coil obstructed*	A/M
272	*Finned coil in circuit 2*	*“as above, for circuit 2”*	A/M
273	*Finned coil in circuit 3*	*“as above, for circuit 3”*	A/M
274	*Finned coil in circuit 4*	*“as above, for circuit 4”*	A/M
301	*Compressor 1 inverter temperature*	*Compressor 1 inverter overheated*	A/M
302	*Compressor 2 inverter temperature*	*“as above, for compressor 2”*	A/M
303	*Compressor 3 inverter temperature*	*“as above, for compressor 3”*	A/M
304	*Compressor 4 inverter temperature*	*“as above, for compressor 4”*	A/M
311	*Compressor 1 discharge temperature*	*Compressor 1 discharge overtemperature (only for units with centrifuge compressors)*	A/M
312	*Compressor 2 discharge temperature*	*“as above, for compressor 2”*	A/M
313	*Compressor 3 discharge temperature*	*“as above, for compressor 3”*	A/M
314	*Compressor 4 discharge temperature*	*“as above, for compressor 4”*	A/M
321	*Compressor 1 low pressure*	*Compressor 1 suction pressure under min. (only for units with centrifuge compressors)*	A/M
322	*Compressor 2 low pressure*	*“as above, for compressor 2”*	A/M
323	*Compressor 3 low pressure*	*“as above, for compressor 3”*	A/M
324	*Compressor 4 low pressure*	*“as above, for compressor 4”*	A/M
331	*Compressor 1 high pressure*	*Compressor 1 compression pressure over max. (only for units with centrifuge compressors)*	B
332	*Compressor 2 high pressure*	*“as above, for compressor 2”*	B
333	*Compressor 3 high pressure*	*“as above, for compressor 3”*	B
334	*Compressor 4 high pressure*	*“as above, for compressor 4”*	B
341	*Compressor 1 input current*	*Compressor 1 current input over max. (only for units with centrifuge compressors)*	B
342	*Compressor 2 input current*	*“as above, for compressor 2”*	B
343	*Compressor 3 input current*	*“as above, for compressor 3”*	B
344	*Compressor 4 input current*	*“as above, for compressor 4”*	B
351	*Compressor 1 rotor temperature*	*Compressor 1 rotor temperature over max. (only for units with centrifuge compressors)*	A/M
352	*Compressor 2 rotor temperature*	*“as above, for compressor 2”*	A/M
353	*Compressor 3 rotor temperature*	*“as above, for compressor 3”*	A/M
354	*Compressor 4 rotor temperature*	*“as above, for compressor 4”*	A/M
361	*Compressor 1 compression ratio*	*Compressor 1 compression ratio over max. (only for units with centrifuge compressors)*	A/M
362	*Compressor 2 compression ratio*	*“as above, for compressor 2”*	A/M
363	*Compressor 3 compression ratio*	*“as above, for compressor 3”*	A/M
364	*Compressor 4 compression ratio*	*“as above, for compressor 4”*	A/M
371	*Compressor 1 bearings*	*Compressor 1 bearings faulty (only for units with centrifuge compressors)*	A/M
372	*Compressor 2 bearings*	*“as above, for compressor 2”*	A/M
373	*Compressor 3 bearings*	*“as above, for compressor 3”*	A/M
374	*Compressor 4 bearings*	*“as above, for compressor 4”*	A/M
381	*Compressor 1 SCR temperature*	*Compressor 1 SCR temperature over max. (only for units with centrifuge compressors)*	A/M
382	*Compressor 2 SCR temperature*	*“as above, for compressor 2”*	A/M
383	*Compressor 3 SCR temperature*	*“as above, for compressor 3”*	A/M
384	*Compressor 4 SCR temperature*	*“as above, for compressor 4”*	A/M
391	*Compressor 1 rotor block*	*Compressor 1 blocked (only for units with centrifuge compressors)*	A/M
392	*Compressor 2 rotor block*	*“as above, for compressor 2”*	A/M
393	*Compressor 3 rotor block*	*“as above, for compressor 3”*	A/M
394	*Compressor 4 rotor block*	*“as above, for compressor 4”*	A/M
400	*Probe 10 err*	*Probe 10 error. Values read by probe 10 out of range.*	A
401	*Probe 1 err*	*“analogue, as above”*	A
402	*Probe 2 err*	*“analogue, as above”*	A

403	*Probe 3 err*	*“analogue, as above”*	A
404	*Probe 4 err*	*“analogue, as above”*	A
405	*Probe 5 err*	*“analogue, as above”*	A
406	*Probe 6 err*	*“analogue, as above”*	A
407	*Probe 7 err*	*“analogue, as above”*	A
408	*Probe 8 err*	*“analogue, as above”*	A
409	*Probe 9 err*	*“analogue, as above”*	A
411	*Exp 1 Probe 1 err*	*Probe 1, expansion 1 fault*	A
412	*Exp 1 Probe 2 err*	*“analogue, as above”*	A
413	*Exp 1 Probe 3 err*	*“analogue, as above”*	A
414	*Exp 1 Probe 4 err*	*“analogue, as above”*	A
421	*Exp 2 Probe 1 err*	*“analogue, as above”*	A
422	*Exp 2 Probe 2 err*	*“analogue, as above”*	A
423	*Exp 2 Probe 3 err*	*“analogue, as above”*	A
424	*Exp 2 Probe 4 err*	*“analogue, as above”*	A
425	*Exp 2 Probe 5 err*	*“analogue, as above”*	A
426	*Exp 2 Probe 6 err*	*“analogue, as above”*	A
427	*Exp 2 Probe 7 err*	*“analogue, as above”*	A
428	*Exp 2 Probe 8 err*	*“analogue, as above”*	A
431	*Exp 3 Probe 1 err*	*“analogue, as above”*	A
432	*Exp 3 Probe 2 err*	*“analogue, as above”*	A
433	*Exp 3 Probe 3 err*	*“analogue, as above”*	A
434	*Exp 3 Probe 4 err*	*“analogue, as above”*	A
451	*Exp 5 Probe 1 err*	*“analogue, as above”*	A
452	*Exp 5 Probe 2 err*	*“analogue, as above”*	A
453	*Exp 5 Probe 3 err*	*“analogue, as above”*	A
454	*Exp 5 Probe 4 err*	*“analogue, as above”*	A
500	*Probe 10 err slave*	*Slave probe 10 faulty - only in units with more than 2 circuits*	A
501	*Probe 1 err slave*	*“analogue, as above”*	A
502	*Probe 2 err slave*	*“analogue, as above”*	A
503	*Probe 3 err slave*	*“analogue, as above”*	A
504	*Probe 4 err slave*	*“analogue, as above”*	A
505	*Probe 5 err slave*	*“analogue, as above”*	A
506	*Probe 6 err slave*	*“analogue, as above”*	A
507	*Probe 7 err slave*	*“analogue, as above”*	A
508	*Probe 8 err slave*	*“analogue, as above”*	A
509	*Probe 9 err slave*	*“analogue, as above”*	A
511	*Exp 1 Probe 1 err slave*	*Probe 1, expansion 1, connected to slave faulty*	A
512	*Exp 1 Probe 2 err slave*	*“analogue, as above”*	A
513	*Exp 1 Probe 3 err slave*	*“analogue, as above”*	A
514	*Exp 1 Probe 4 err slave*	*“analogue, as above”*	A
521	*Exp 2 Probe 1 err slave*	*“analogue, as above”*	A
522	*Exp 2 Probe 2 err slave*	*“analogue, as above”*	A
523	*Exp 2 Probe 3 err slave*	*“analogue, as above”*	A
524	*Exp 2 Probe 4 err slave*	*“analogue, as above”*	A
525	*Exp 2 Probe 5 err slave*	*“analogue, as above”*	A
526	*Exp 2 Probe 6 err slave*	*“analogue, as above”*	A
527	*Exp 2 Probe 7 err slave*	*“analogue, as above”*	A
528	*Exp 2 Probe 8 err slave*	*“analogue, as above”*	A
531	*Exp 3 Probe 1 err slave*	*“analogue, as above”*	A
532	*Exp 3 Probe 2 err slave*	*“analogue, as above”*	A
533	*Exp 3 Probe 3 err slave*	*“analogue, as above”*	A
534	*Exp 3 Probe 4 err slave*	*“analogue, as above”*	A
551	*Exp 5 Probe 1 err slave*	*“analogue, as above”*	A
552	*Exp 5 Probe 2 err slave*	*“analogue, as above”*	A
553	*Exp 5 Probe 3 err slave*	*“analogue, as above”*	A
554	*Exp 5 Probe 4 err slave*	*“analogue, as above”*	A
611	*Antifreeze pre-alarm evaporator 1*	*Low water temperature at evaporator outlet pre-alarm. Also specifies which evaporator (if more than one) is involved in the alarm condition*	S
612	*Antifreeze pre-alarm evaporator 2*	*“as above, for circuit 2”*	S
613	*Antifreeze pre-alarm evaporator 3*	*“as above, for circuit 3”*	S
614	*Antifreeze pre-alarm evaporator 4*	*“as above, for circuit 4”*	S

631	*Low pressure in circuit 1 pre-alarm*	*Low pressure acquired from circuit 1 transducer pre-alarm*	S
632	*Low pressure in circuit 2 pre-alarm*	*"as above, for circuit 2"*	S
633	*Low pressure in circuit 3 pre-alarm*	*"as above, for circuit 3"*	S
634	*Low pressure in circuit 4 pre-alarm*	*"as above, for circuit 4"*	S
641	*High pressure in circuit 1 pre-alarm*	*High pressure acquired from circuit 1 transducer pre-alarm*	S
642	*High pressure in circuit 2 pre-alarm*	*"as above, for circuit 2"*	S
643	*High pressure in circuit 3 pre-alarm*	*"as above, for circuit 3"*	S
644	*High pressure in circuit 4 pre-alarm*	*"as above, for circuit 4"*	S

Key to "RESET" column:

M = Manual reset alarm (if the condition that generated the alarm is eliminated, the alarm must be reset from the keypad); sets "cumulative alarms"
A = Automatic reset alarm (if the condition that generated the alarm is eliminated, the alarm is reset automatically); sets "cumulative alarms"
A/M = Automatic reset alarm for the first "n" cut-ins, after which manual; sets "cumulative alarms"
S = Signal on display (does not set "cumulative alarms")
S-A = Automatic reset signal (that does not stop the machine) or alarm. The mode is selected from a parameter
M - A/M = Manual reset alarm (in hermetic, alternative and screw compressors), automatic for the first "n" cut-ins, after which manual (in centrifuge compressors)
B =Block that cannot be reset from the display; sets "cumulative alarms". To eliminate the alarm, switch the relative compressor off and then back on again.

3 TABLE OF MASKS

Press [UP] or [DOWN] to move from one mask to another inside the same menu.
Press [ENTER] to access the parameter, press [UP] or [DOWN] to change the value of the parameter.

Mask	Description	Para n°
Com. : ON ALXXX Mode : chiller State: ON keypad LIMIT ID:011 U:01	Main display mask. Shows operating mode and status. The unit can be switched on and off with the On/Off command: press "Enter" to move to "Com. :", select the command using the "Up" or "Down" keys and press "Enter" again to confirm. Also displays the following messages: “ALxxx”: alarm active, “Sxxx”: signal active, "U:xx" : unit configuration address, "ID:xxx" : unit supervisor address, Symbols describing unit status also appear (see table at the end of this manual).	
Temp. Req. Act. Cool. 042 050 % Rec. 040 050 % Pump time 010s	Shows the request of the controller and the operating percentage of the thermoregulator (cool/heat) and recovery (if possible). Also shows the pump time remaining during switching on and off.	
Temp. In. Out. Evap. 12.5 07.0°C Rec. 35.6 40.5°C Cond. 38.0 42.5°C	Shows the inlet and outlet water temperature. (evaporator, recuperator and condenser are only displayed if they are fitted).	
Temp. In. Out. Evap. 12.5 07.0°C Evap1 07.2°C Evap2 06.9°C	(if 2 evaporators are fitted) Displays inlet and outlet temperatures of the evaporator or condenser (depending on whether the unit is in the chiller or heat pump mode) and the outlet temperature of the two evaporators.	
Temp. In. Out. Cond. 24.3 22.4°C Cond.1 22.3°C Cond.2 22.4°C	(if 2 condensers are fitted) Displays inlet and outlet temperatures of the evaporator or condenser (depending on whether the unit is in the chiller or heat pump mode) and the outlet temperature of the two condensers.	
Temp. Freecooling 12.3°C External air 15.4°C Optional 19.6°C	(for water-air units) Displays freecooling temperature (in chiller+freecooling units), external air temperature and optional temperature (if the probes are enabled).	
User ← ↓	Access mask to user menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Adjustment type prop. step IN INLET	Chooses between proportional step adjustment, Quick Mind adjustment and modulating adjustment for screw compressors. Also defines on which temperature probe the adjustment is made. If the unit has more than one evaporator or step adjustment is set, adjustment can only be made on the inlet probe.	39.01 39.01 39.02
Start mode standard	Chooses between standard or rapid start-up (only displayed in the Quick Mind adjustment mode and the modulating adjustment mode with screw compressors)	39.03
Dead area width: 035 %	Sets the percentage with respect to the dead area and around the setpoint in which the compressor is not modulated. (only for modulating screw compressors)	39.04
inlet adjustment: Type PROPORTION.	Defines the type of adjustment. (only visible in the step inlet adjustment mode)	39.05
Integral time: 0090 s Integral correction limit: 020 %	Sets integration time and correction limit (displayed in the proportional step inlet adjustment mode with proportional + integral adjustment type)	39.06 39.07
Chiller set point limits: Low 11.0 °C High 20.0 °C	Maximum and minimum setpoint values that can be set with inlet adjustment N.B.: For low temperature units, the minimum value that can be set for the low limit is equal to the antifreeze setpoint +2°C (also check the value set for forced shut-down in the Quick Mind adjustment mode and modulating adjustment mode with screw compressors).	39.08 39.09 39.10
Chiller set point limits: Low 06.0 °C High 18.0 °C	Maximum and minimum setpoint values that can be set with outlet adjustment N.B.: For low temperature units, the minimum value that can be set for the low limit is equal to the antifreeze setpoint +2°C (also check the value set for forced shut-down in the Quick Mind adjustment mode and modulating adjustment mode with screw compressors).	39.11 39.12
Heat pump set point limits: Low 30.0 °C High 44.0 °C	Maximum and minimum setpoint values that can be set with inlet adjustment (only visible if the heat pump configuration is set)	39.13 39.14
Heat pump set point limits: Low 30.0 °C High 48.0 °C	Maximum and minimum setpoint values that can be set with outlet adjustment (only visible if the heat pump configuration is set)	39.15 39.16

Recovery setpoint limits: Low 30.0 °C High 45.0 °C	Maximum and minimum recovery setpoints. (only visible if recovery is configured)	39.17 39.18
Forced shutdown Chiller 04.5 °C Heat pump 51.0 °C	(Only in the Quick Mind adjustment mode and modulating mode with screw compressors) Forces the compressors to shut down if: Tout Chiller < chiller minimum or Tout Heat Pump > heat pump maximum	39.19 39.20
Temperature adj band 02.5 °C Recovery adj. band 02.5 °C	Sets the temperature and recovery adjustment band.	39.21 39.22
Dual Setpoint Enabled N	Enables selection of a second setpoint via an external contact (only displayed on compatible units).	39.23
Setpoint variation Enabled 4-20 mA Min. 00.0 °C Max. 06.0 °C	Enables setpoint variation through an external input which can be configured at 4-20mA or 0-10V. Maximum and minimum variation limits can also be set. If time bands have been enabled the external setpoint cannot be enabled (only displayed on compatible units). For units with alternative or screw compressors only a 4-20 mA variation can be selected.	39.24 39.25 39.26 39.27
Rec. setpoint var. Enabled 4-20 mA Min. 00.0 °C Max. 06.0 °C	Enables recovery setpoint variation through an external input which can be configured at 4-20mA or 0-10V. Maximum and minimum variation limits can also be set. If time bands have been enabled the external setpoint cannot be enabled (only displayed on compatible units). For units with alternative or screw compressors only a 4-20 mA variation can be selected.	39.28 39.29 39.30 39.31
Pump config. Type of use: automatic	(Only displayed if more than one pump is set) Selects whether to use both pumps through hourly rotation (FIFO if they have the same number of operating hours) or override pump 1 or pump 2.	39.32
Minimum time between pump switch-on and compressor switch-on 060 s	Defines the delay between pump start-up and compressor start-up after the unit has been switched on.	39.33
Delay in pump shutdown 060 s	Defines pump shutdown delay after the unit has been switched off.	39.34
Demand limit Enabled N	Enables limitation of the power delivered by the unit.	39.35
Demand limit Chiller 050 % Heat Pump 050 % Recovery 050 %	Sets the maximum percentage of power delivered by the unit in the chiller, heat pump (in heat pump units) and recovery (in compatible units where possible) modes.	39.36 39.37 39.38
On/Off enabled from digital input: On/Off: Y Chiller/P.D: N	Allows the on/off status of the unit to be selected from external enables. Also performs chiller/heat pump switching in heat pump units.	39.39 39.40
Time bands enable : Disabled	Activates/deactivates time bands. The time bands cannot be activated if the external setpoint is enabled.	39.41
Serial line configuration: Disabled	Allows the devices connected to the serial interface card to be enabled and selected ("0"=disabled, "1"= supervision, "2"= sequencer, "3"=Manager 3000). N.B.: the Service software does not need to be enabled.	39.42
Enable from Superv.: On/Off: N Operating mode: N	Allows the on/off status of the unit to be selected from a supervision system. Also performs operating mode switching (to modify the latter, the unit must be switched off).	39.43 39.44
Serial settings for Modbus protocol Speed 9600 baud ID 011	Defines the connection parameters with the supervisor: protocol type, communication speed and unit identification number.	39.45 39.46 39.47
Language selection: English Select language	Selects the required language; “Select language” flashes on the last line in all the available languages. Once a language has been selected, the programme automatically switches to the first mask of the display menu. N.B.: Up to three languages are present on the card: Italian, English and another language.	39.48
W 3000 Code CA 12.00 GB 🔒🔒 Man. C0240001-09-06	This mask contains the reference information of the software [Code] and of the reference technical manual [Man.]. The closed padlock symbol shows that the card is provided with its propriety software; two padlocks appear on units with 3 or 4 circuits	
Enter other user password 0000	Personalises the password by defining one that will replace the default password.	

Clock ← ↓	Access mask to clock menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Clock board not installed	Mask showing that the clock card is missing or damaged.	
Clock configuration: Date Time 01/01/04 08:00	Current date and time settings.	
Time bands not enabled. See user menu	Indicates that the time bands are set correctly but not enabled. To enable them, consult the user menu.	
Daily time band programming advanced:	Advanced time band programming manages four different daily time bands, type A and type B; each type can be personalised and each is independent from the other. Only the A-type time band is used in the standard programming mode.	51.01
Weekly timetable Monday type A Tuesday type A Wednesday type A	Weekly timetable setting.	51.02 51.03 51.04
Weekly timetable Thursday type A Friday type A Saturday disabled	Weekly timetable setting.	51.05 51.06 51.07
Weekly timetable Sunday disabled	Weekly timetable setting.	51.08
Time band 1A Off Time 00:00 / 07:00 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, first daily time band.	53.01 53.02 53.03 53.04 53.05 53.06
Time band 2A Adj. Time 07:00 / 12:00 Sp S 07.0°C W 45.0°C Sp R 45.0°C	Setting band A, second daily time band.	53.07 53.08 53.09 53.10 53.11 53.12
Time band 3A Off Time 12:00 / 13:30 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, third daily time band.	53.13 53.14 53.15 53.16 53.17 53.18
Time band 4A Adj. Time 13:30 / 19:30 Sp S 07.0°C W 45.0°C Sp R 45.0°C	Setting band A, fourth daily time band.	53.19 53.20 53.21 53.22 53.23 53.24
Time band 5A Off Time 19:30 / 19:30 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, fifth daily time band.	53.25 53.26 53.27 53.28 53.29 53.30
Time band 6A Off Time 19:30 / 19:30 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, sixth daily time band.	53.31 53.32 53.33 53.34 53.35 53.36
Time band 7A Off Time 19:30 / 19:30 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, seventh daily time band.	53.37 53.38 53.39 53.40 53.41 53.42

Time band 8A Off Time 19:30 / 19:30 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, eighth daily time band.	53.43 53.44 53.45 53.46 53.47 53.48
Time band 9A Off Time 19:30 / 19:30 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, ninth daily time band.	53.49 53.50 53.51 53.52 53.53 53.54
Time band 10A Off Time 19:30 / 19:30 Sp S 08.0°C W 40.0°C Sp R 40.0°C	Setting band A, tenth daily time band.	53.55 53.56 53.57 53.58
Time band 1B Off Time 00:00 / 06:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, first daily time band.	55.01 55.02 55.03 55.04 55.05 55.06
Time band 2B Off Time 00:00 / 06:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, second daily time band.	55.07 55.08 55.09 55.10 55.11 55.12
Time band 3B Adj. Time 06:30 / 19:30 Sp S 07.0°C W 45.0°C Sp R 45.0°C	Setting band B, third daily time band.	55.13 55.14 55.15 55.16 55.17 55.18
Time band 4B Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, fourth daily time band.	55.19 55.20 55.21 55.22 55.23 55.24
Time band 5B Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, fifth daily time band.	55.25 55.26 55.27 55.28 55.29 55.30
Time band 6B Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, sixth daily time band.	55.31 55.32 55.33 55.34 55.35 55.36
Time band 7B Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, seventh daily time band.	55.37 55.38 55.39 55.40 55.41 55.42
Time band 8B Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, eighth daily time band.	55.43 55.44 55.45 55.46 55.47 55.48
Time band 9B Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, ninth daily time band.	55.49 55.50 55.51 55.52 55.53 55.54
Time band 10B Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band B, tenth daily time band.	55.55 55.56 55.57 55.58

Time band 1C Off Time 00:00 / 06:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, first daily time band.	57.01 57.02 57.03 57.04 57.05 57.06
Time band 2C Off Time 00:00 / 06:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, second daily time band.	57.07 57.08 57.09 57.10 57.11 57.12
Time band 3C Adj. Time 06:30 / 19:30 Sp S 07.0°C W 45.0°C Sp R 45.0°C	Setting band C, third daily time band.	57.13 57.14 57.15 57.16 57.17 57.18
Time band 4C Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, fourth daily time band.	57.19 57.20 57.21 57.22 57.23 57.24
Time band 5C Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, fifth daily time band.	57.25 57.26 57.27 57.28 57.29 57.30
Time band 6C Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, sixth daily time band.	57.31 57.32 57.33 57.34 57.35 57.36
Time band 7C Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, seventh daily time band.	57.37 57.38 57.39 57.40 57.41 57.42
Time band 8C Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, eighth daily time band.	57.43 57.44 57.45 57.46 57.47 57.48
Time band 9C Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, ninth daily time band.	57.49 57.50 57.51 57.52 57.53 57.54
Time band 10C Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band C, tenth daily time band.	57.55 57.56 57.57 57.58
Time band 1D Off Time 00:00 / 06:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, first daily time band.	59.01 59.02 59.03 59.04 59.05 59.06
Time band 2D Off Time 00:00 / 06:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, second daily time band.	59.07 59.08 59.09 59.10 59.11 59.12

Time band 3D Adj. Time 06:30 / 19:30 Sp S 07.0°C W 45.0°C Sp R 45.0°C	Setting band D, third daily time band.	59.13 59.14 59.15 59.16 59.17 59.18
Time band 4D Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, fourth daily time band.	59.19 59.20 59.21 59.22 59.23 59.24
Time band 5D Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, fifth daily time band.	59.25 59.26 59.27 59.28 59.29 59.30
Time band 6D Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, sixth daily time band.	59.31 59.32 59.33 59.34 59.35 59.36
Time band 7D Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, seventh daily time band.	59.37 59.38 59.39 59.40 59.41 59.42
Time band 8D Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, eighth daily time band.	59.43 59.44 59.45 59.46 59.47 59.48
Time band 9D Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, ninth daily time band.	59.49 59.50 59.51 59.52 59.53 59.54
Time band 10D Off Time 19:30 / 19:30 Sp S 09.0°C W 40.0°C Sp R 40.0°C	Setting band D, tenth daily time band.	59.55 59.56 59.57 59.58
In/Out ← ↓	Access mask to In/Out menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Dig.In. master 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs and specifies their state. C: Contact closed A: Contact open The number of inputs displayed depends on the type of unit. (the figures on the second row are for reference purposes) Master is only specified on units with 3 or 4 circuits.	
Dig.Out. master 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs and specifies their state. C: Contact closed A: Contact open The number of outputs displayed depends on the type of unit. (the figures on the second row are for reference purposes) Master is only specified on units with 3 or 4 circuits.	
An. In. master N° Value 1 07.3 bar 2 12.3 °C	Display of analogue inputs 1 and 2. Master is only specified on units with 3 or 4 circuits.	
An. In. master N° Value 3 12.3 °C 4 12.3 °C	Display of analogue inputs 3 and 4. Master is only specified on units with 3 or 4 circuits.	
An. In. master N° Value 5 12.3 °C 6 07.3 bar	Display of analogue inputs 5 and 6. Master is only specified on units with 3 or 4 circuits.	

An. In. master N° Value 7 05.3 °C 8 00.0	Display of analogue inputs 7 and 8. Master is only specified on units with 3 or 4 circuits.	
An. In. master N° Value 9 00.0 °C 10 A	Display of analogue inputs 9 and 10. Master is only specified on units with 3 or 4 circuits.	
An. Out. master N° Value 1 00.0 V 2 00.0 V	Voltage applied to analogue outputs 1 and 2. Master is only specified on units with 3 or 4 circuits.	
An. Out. master N° Value 3 00.0 V 4 00.0 V	Voltage applied to analogue outputs 3 and 4. Master is only specified on units with 3 or 4 circuits.	
An. Out. master N° Value 5 00.0 V 6 00.0 V	Voltage applied to analogue outputs 5 and 6. Master is only specified on units with 3 or 4 circuits.	
Masters required Exp.1: Y Exp.2: N Exp.3: Y Exp.4: N Exp.5: N	Mask indicating the address for the expansion boards. This changes depending on the parameter settings. Master is only specified on units with 3 or 4 circuits.	
Masters on-line Exp.1: Y Exp.2: N Exp.3: Y Exp.4: N Exp.5: N	Mask for checking connection with the expansion boards. N means that there is no link with the expansion indicated in the address. Master is only specified on units with 3 or 4 circuits.	
Dig.In. master exp1 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 1 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
Dig.Out. master exp1 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 1 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
An. In. master exp1 N° Value 1 35.6 °C 2 40.5 °C	Displays analogue inputs 1 and 2 of expansion 1 (if present). Master is only specified on units with 3 or 4 circuits.	
An. In. master exp1 N° Value 3 37.2 °C 4 37.2 °C	Displays analogue inputs 3 and 4 of expansion 1 (if present). Master is only specified on units with 3 or 4 circuits.	
Dig.In. master exp2 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 2 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
Dig.Out. master exp2 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 2 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
An. In. master exp2 N° Value 1 04.2 bar 2 03.9 bar	Displays analogue inputs 1 and 2 of expansion 2 (if present). Master is only specified on units with 3 or 4 circuits.	
An. In. master exp2 N° Value 3 35.6 °C 4 40.5 °C	Displays analogue inputs 3 and 4 of expansion 2 (if present). Master is only specified on units with 3 or 4 circuits.	
An. In. master exp2 N° Value 5 22.3 °C 6 24.2 °C	Displays analogue inputs 5 and 6 of expansion 2 (if present). Master is only specified on units with 3 or 4 circuits.	
An. In. master exp2 N° Value 7 22.4 °C 8 - °C	Displays analogue inputs 7 and 8 of expansion 2 (if present). Master is only specified on units with 3 or 4 circuits.	
Dig.In. master exp3 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 3 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
Dig.Out. master exp3 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 3 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	

An. In. master exp3 N° Value 1 06.0 °C 2 00.0 °C	Displays analogue inputs 1 and 2 of expansion 3 (if present). Master is only specified on units with 3 or 4 circuits.	
An. In. master exp3 N° Value 3 00.0 °C 4 00.0 °C	Displays analogue inputs 3 and 4 of expansion 3 (if present). Master is only specified on units with 3 or 4 circuits.	
An. Out. master exp3 N° Value 1 00.0 V	Voltage applied to analogue output 1 of expansion 3 (if present). Master is only specified on units with 3 or 4 circuits.	
Dig.In. master exp4 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 4 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
Dig.Out. master exp4 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 4 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
An. In. master exp4 N° Value 1 A 2 A	Displays analogue inputs 1 and 2 of expansion 4 (if present). Master is only specified on units with 3 or 4 circuits.	
An. In. master exp4 N° Value 3 A 4 A	Displays analogue inputs 3 and 4 of expansion 4 (if present). Master is only specified on units with 3 or 4 circuits.	
Dig.In. master exp5 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 5 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
Dig.Out. master exp5 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 5 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
An. In. master exp5 N° Value 1 00.0 °C 2 00.0 °C	Displays analogue inputs 1 and 2 of expansion 5 (if present). Master is only specified on units with 3 or 4 circuits.	
An. In. master exp5 N° Value 3 00.0 °C 4 00.0 °C	Displays analogue inputs 3 and 4 of expansion 5 (if present). Master is only specified on units with 3 or 4 circuits.	
Dig.In. slave 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs and specifies their state. C: Contact closed A: Contact open The number of inputs displayed depends on the type of unit. (the figures on the second row are for reference purposes)	
Dig.Out. slave 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs and specifies their state. C: Contact closed A: Contact open The number of outputs displayed depends on the type of unit. (the figures on the second row are for reference purposes)	
An. In. slave N° Value 1 07.3 bar 2 12.3 °C	Display of analogue inputs 1 and 2.	
An. In. slave N° Value 3 12.3 °C 4 12.3 °C	Display of analogue inputs 3 and 4.	
An. In. slave N° Value 5 12.3 °C 6 07.3 bar	Display of analogue inputs 5 and 6.	
An. In. slave N° Value 7 05.3 °C 8 00.0	Display of analogue inputs 7 and 8.	
An. In. slave N° Value 9 00.0 °C 10 A	Display of analogue inputs 9 and 10.	
An. Out. slave N° Value 1 00.0 V 2 00.0 V	Voltage applied to analogue outputs 1 and 2.	

An. Out. slave N° Value 3 00.0 V 4 00.0 V	Voltage applied to analogue outputs 3 and 4.	
An. Out. slave N° Value 5 00.0 V 6 00.0 V	Voltage applied to analogue outputs 5 and 6.	
Slaves required Exp.1: Y Exp.2: N Exp.3: Y Exp.4: N Exp.5: N	Mask indicating the address for the slave expansion boards. This changes depending on the parameter settings. Master is only specified on units with 3 or 4 circuits.	
Slaves on-line Exp.1: Y Exp.2: N Exp.3: Y Exp.4: N Exp.5: N	Mask for checking connection with the slave expansion boards. N means that there is no link with the expansion indicated in the address. Master is only specified on units with 3 or 4 circuits.	
Dig.In. slave exp1 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 1 (if present) and specifies their state. C: Contact closed A: Contact open	
Dig.Out. slave exp1 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 1 (if present) and specifies their state. C: Contact closed A: Contact open	
An. In. slave exp1 N° Value 1 35.6 °C 2 40.5 °C	Displays analogue inputs 1 and 2 of expansion 1 (if present).	
An. In. slave exp1 N° Value 3 37.2 °C 4 37.2 °C	Displays analogue inputs 3 and 4 of expansion 1 (if present).	
Dig.In. slave exp2 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 2 (if present) and specifies their state. C: Contact closed A: Contact open	
Dig.Out. slave exp2 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 2 (if present) and specifies their state. C: Contact closed A: Contact open	
An. In. slave exp2 N° Value 1 04.2 bar 2 03.9 bar	Displays analogue inputs 1 and 2 of expansion 2 (if present).	
An. In. slave exp2 N° Value 3 35.6 °C 4 40.5 °C	Displays analogue inputs 3 and 4 of expansion 2 (if present).	
An. In. slave exp2 N° Value 5 22.3 °C 6 24.2 °C	Displays analogue inputs 5 and 6 of expansion 2 (if present).	
An. In. slave exp2 N° Value 7 22.4 °C 8 - °C	Displays analogue inputs 7 and 8 of expansion 2 (if present).	
Dig.In. slave exp3 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 3 (if present) and specifies their state. C: Contact closed A: Contact open	
Dig.Out. slave exp3 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 3 (if present) and specifies their state. C: Contact closed A: Contact open	
An. In. slave exp3 N° Value 1 06.0 °C 2 00.0 °C	Displays analogue inputs 1 and 2 of expansion 3 (if present).	
An. In. slave exp3 N° Value 3 00.0 °C 4 00.0 °C	Displays analogue inputs 3 and 4 of expansion 3 (if present).	
An. Out. slave exp3 N° Value 1 00.0 V	Voltage applied to analogue output 1 of expansion 3 (if present).	
Dig.In. slave exp4 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 4 (if present) and specifies their state. C: Contact closed A: Contact open	

Dig.Out. slave exp4 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 4 (if present) and specifies their state. C: Contact closed A: Contact open	
An. In. slave exp4 N° Value 1 A 2 A	Displays analogue inputs 1 and 2 of expansion 4 (if present).	
An. In. slave exp4 N° Value 3 A 4 A	Displays analogue inputs 3 and 4 of expansion 4 (if present).	
Dig.In. slave exp5 12345 67890 12345 CCCCC CCCCC CCCCC CCC	Displays the state of the digital inputs of expansion 5 (if present) and specifies their state. C: Contact closed A: Contact open	
Dig.Out. slave exp5 12345 67890 12345 AAAAA AAAAA AAAAA AAAAA AAAAA AAAA	Displays the state of the digital outputs of expansion 5 (if present) and specifies their state. C: Contact closed A: Contact open	
An. In. slave exp5 N° Value 1 00.0 °C 2 00.0 °C	Displays analogue inputs 1 and 2 of expansion 5 (if present).	
An. In. slave exp5 N° Value 3 00.0 °C 4 00.0 °C	Displays analogue inputs 3 and 4 of expansion 5 (if present).	
Setpoint ← ↓	Access mask to setpoint menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Unit type: chiller Operating mode: chiller	Mask for displaying the unit type and setting the operating mode.	43.01
Active set point: Main 07.0 °C Recovery 42.5 °C	Displays the current setpoint. If the letter R appears in the top right-hand corner, the active setpoint is the secondary one.	
Chiller setpoint 07.0 °C Heat pump setpoint 42.5 °C	Sets the chiller and heat pump setpoint for inlet adjustment.	43.02 43.03 43.04
Chiller setpoint 11.0 °C Heat pump setpoint 45.0 °C	Sets the chiller and heat pump setpoint for outlet adjustment.	43.05 43.06
Chiller dual setpoint 07.0 °C Heat pump dual setpoint 45.0 °C	Mask for setting the second set point (only visible if the dual setpoint function is enabled P39.23).	43.07 43.08
Recovery set point 42.5 °C	Sets the recovery setpoint (only displayed if recovery is enabled).	43.09
Unit ← ↓	Access mask to unit menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Temp. In. Out. Evap. 12.5 07.0°C Rec. 35.6 40.5°C Cond. 38.0 42.5°C	Displays inlet and outlet temperatures of the evaporator, recuperator and condenser (where fitted).	
Temp. In. Out. Evap. 12.5 07.0°C Evap1 07.2°C Evap2 06.9°C	(if 2 evaporators are fitted) Displays inlet and outlet temperatures of the evaporator or condenser (depending on whether the unit is in the chiller or heat pump mode) and the outlet temperature of the two evaporators.	
Temp. In. Out. Cond. 24.3 22.4°C Cond.1 22.3°C Cond.2 22.4°C	(if 2 condensers are fitted) Displays inlet and outlet temperatures of the evaporator or condenser (depending on whether the unit is in the chiller or heat pump mode) and the outlet temperature of the two condensers.	
Temp. Freecooling 12.3°C External air 15.4°C Optional 19.6°C	(for water-air units) Displays freecooling temperature (in chiller+freecooling units), external air temperature and optional temperature (if the probes are enabled).	
Circ1 Circ2 hp 07.3 07.3bar lp 04.2 03.9bar st Off Off	Displays high and low pressure values (if transducers are fitted) and codifies the operating mode of circuits 1 and 2. (see table at end of manual)	

Circ3 Circ4 hp 07.3 07.3bar lp 04.2 03.9bar st Off Off	Displays high and low pressure values (if transducers are fitted) and codifies the operating mode of circuits 3 and 4. (see table at end of manual)	
Circ1 Circ2 tc 07.3 07.3 °C tl 00.0 00.0 °C sub 00.0 00.0 °C	(in chiller units with recovery) Displays pressure converted into temperature values, temperature of the liquid and calculated subcooling values of circuits 1 and 2.	
Circ3 Circ4 tc 07.3 07.3 °C tl 00.0 00.0 °C sub 00.0 00.0 °C	(in chiller units with recovery) Displays pressure converted into temperature values, temperature of the liquid and calculated subcooling values of circuits 3 and 4.	
Timer tuning defrost Range 1200 - 03600 s Free Defrost 0370 s	Displays, for timer tuning defrost, the variation range in the defrost delay calculated according to external temperature. Also displays the maximum duration of the free defrost calculated according to external temperature.	
Circ1 Circ2 Time 02700 02700 s Timer tuning defrost	Displays the defrost delay calculated by the timer tuning defrost algorithm.	
Circ3 Circ4 Time 02700 02700 s Timer tuning defrost	Displays the defrost delay calculated by the timer tuning defrost algorithm.	
Circ1 Circ2 Time 0188 0125 s Max 0290 0270 s Free Defrost	Displays the free defrost enable time and the maximum time calculated according to the length of the delay.	
Circ3 Circ4 Time 0188 0125 s Max 0290 0270 s Free Defrost	Displays the free defrost enable time and the maximum time calculated according to the length of the delay.	
Circ1 Circ2 defr N N T.del 0904 0000 s T.def 0000 0028 s	Displays the defrosting status of circuits 1 and 2, the delay before defrosting starts and the time taken to defrost.	
Circ3 Circ4 defr N N T.del 0904 0000 s T.def 0000 0028 s	Displays the defrosting status of circuits 3 and 4, the delay before defrosting starts and the time taken to defrost.	
Discharge temp. Comp.1 105.3°C Comp.2 098.4°C	Displays the discharge temperature (if probes are present) of compressors 1 and 2.	
Discharge temp. Comp.3 105.3°C Comp.4 098.4°C	Displays the discharge temperature (if probes are present) of compressors 3 and 4.	
Analogue outputs: Condens.adj. 1:000 % Condens.adj. 2:000 %	Displays analogue outputs 1 and 2. Shows the percentage of demand of the devices connected to it (for non-linear devices correspondence with supplied voltage V does not apply). Compares Cond.1-2 adj. with single or dual ventilation adjustment.	
Analogue outputs: Condens.adj. 3:000 % Condens.adj. 4:000 %	Displays analogue outputs 3 and 4.	
Analogue outputs: --- % --- %	Displays analogue outputs 5 and 6.	
Analogue outputs: 3 Freecooling :000 % --- %	Displays analogue outputs 1 and 2 of expansion 3.	
Analogue outputs: Condens.adj. 3:000 % Condens.adj. 4:000 %	Displays analogue outputs 1 and 2 of the slave card. Shows the percentage of demand of the devices connected to it (for non-linear devices correspondence with supplied voltage V does not apply). Compares Cond. 3-4 adj. with single or dual ventilation adjustment.	
Analogue outputs: --- % --- %	Displays analogue outputs 3 and 4 of the slave.	
Analogue outputs: --- % --- %	Displays analogue outputs 5 and 6 of the slave.	
Analogue outputs: 3 Freecooling :000 %	Displays analogue outputs 1 and 2 of slave expansion 3.	

Hour counter Pump 1 000000 Pump 2 000000	Displays the operating hours of the circulation pump (pump 2 appears only if two pumps are enabled).	
Compr. hour counter Media ore 000000 C1 000000 C2 000000 C3 000000 C4 000000	Displays average compressor hours. Displays the operating hours of compressors 1, 2, 3 and 4.	
Comp.1 Work Req 078 << 082 Act 082% 32450rpm CR 02.82	Displays the operating status of the centrifuge compressors, the request and effective activation, the rpm and the percentage delivered.	
Comp.1 bar °C hp 20.0 08.0 lp 05.0 01.0	Displays other data relative to the centrifuge compressors, such as high and low pressure and the relative temperature conversions.	
Comp.2 Work Req 075 << 080 Act 080% 29500rpm CR 02.84	Displays the operating status of the centrifuge compressors, the request and effective activation, the rpm and the percentage delivered.	
Comp.2 bar °C hp 20.0 08.0 lp 05.0 01.0	Displays other data relative to the centrifuge compressors, such as high and low pressure and the relative temperature conversions.	
Comp.3 Work Req 076 << 082 Act 082% 33600rpm CR 02.86	Displays the operating status of the centrifuge compressors, the request and effective activation, the rpm and the percentage delivered.	
Comp.3 bar °C hp 20.0 08.0 lp 05.0 01.0	Displays other data relative to the centrifuge compressors, such as high and low pressure and the relative temperature conversions.	
Comp.4 Work Req 078 << 081 Act 081% 30250rpm CR 02.83	Displays the operating status of the centrifuge compressors, the request and effective activation, the rpm and the percentage delivered.	
Comp.4 bar °C hp 20.0 08.0 lp 05.0 01.0	Displays other data relative to the centrifuge compressors, such as high and low pressure and the relative temperature conversions.	
Enable circuits Circ1: Y Circ2: Y Circ3: N Circ4: N	Selects/deselects circuits.	47.01 47.02 47.03 47.04
Enable compressors C1:Y C2:Y C3:Y C4:Y	Selects/deselects compressors.	47.05 47.06 47.07 47.08
W 3000 Cod. CA 12.00 GB 🔒🔒	This mask contains the reference information of the software [Code]. The closed padlock symbol shows that the card is provided with its propriety software; two padlocks appear on units with 3 or 4 circuits	

4 TABLE OF MASKS W3000 base

Mask	Description	Par. n°
level1 | level2 | level3		
OFF	Main display mask. Indicates the state of the unit ("ON", "OFF").	
MODE	The submask displays the operating mode of the unit	
CH	"CH"=Chiller, "HP"= Heat Pump	
ST	The submask displays the operating status of the unit	
On h	"ON K"= on from keypad, "ON D"= on from digital input, "ON B"= on from time bands, "ON S"= on from supervisor, "OFFA"= off from alarm, "OFFS"= off from supervisor, "OFFB"= off from time bands, "OFFD"= off from digital input, "OFFK"= off from keypad, "OFF"= off	
rEQ	The submask displays the percentage of power requested by the thermoregulator	
50	value ranging from 0 to 100	
ACT	The submask displays the percentage of power delivered by the thermoregulator	
50	value ranging from 0 to 100	
PUMP	The submask displays the time remaining before the pump is switched on/off.	
60	If the time decreases the unit is in the switching on/off phase. The time is expressed in seconds.	
EUIn	The submask displays the inlet temperature of the evaporator	
12.5	temperature expressed in degrees centigrade	
EUO1	The submask displays the outlet temperature of evaporator 1	
07.2	temperature expressed in degrees centigrade	
EUO2	(If 2 evaporators are present). The submask displays the outlet temperature of evaporator 2	
06.9	temperature expressed in degrees centigrade	
CdIn	The submask displays the inlet temperature of the condenser (only for water/water units if the condenser inlet probe is enabled)	
24.3	temperature expressed in degrees centigrade	
CdO1	The submask displays the outlet temperature of condenser n° 1 (only for water/water units if the condenser outlet probe is enabled)	
22.3	temperature expressed in degrees centigrade	
CdO2	(If 2 condensers are present). The submask displays the outlet temperature of condenser n° 2 (only for water/water units if the condenser outlet probe is enabled)	
22.4	temperature expressed in degrees centigrade	
EhT	(In water/air units, if the external air temperature probe is enabled). Displays external temperature	
15.6	temperature expressed in degrees centigrade	
OPT	(In water-air units, if the operational temperature probe is enabled). Displays optional temperature	
18.8	temperature expressed in degrees centigrade	
MAn	Manufacturer menu	
USEr	User menu	
rEG	The submask is used to set the adjustment type.	
STEP	(Switch off the unit before changing this setting!!!). "STEP"= steps, "QM"= quick mind	39.01
FLOu	The submask is used to set the adjustment flow type.	
In	"IN"= inlet flow, "OUT"= outlet type	39.02
GO	(only visible in the Quick Mind adjustment mode). The submask is used to choose between two types of start-up	
Std	"STD"= standard, "FAST"= fast	39.03
PrOP	(Enable the "step adjustment" parameter first). The submask is used to set step adjustment.	
P	"P"=proportional adjustment, "P+I"=proportional + integral adjustment	39.05
LL S	The submask is used to set the lower limit of the chiller setpoint with inlet adjustment	
0	expressed in degrees centigrade	39.08 39.09
HL S	The submask is used to set the upper limit of the chiller setpoint with inlet adjustment	
0	expressed in degrees centigrade	39.10
LL S	The submask is used to set the lower limit of the chiller setpoint with outlet adjustment	
0	expressed in degrees centigrade	39.11
HL S	The submask is used to set the upper limit of the chiller setpoint with outlet adjustment	
0	expressed in degrees centigrade	39.12
LL u	The submask is used to set the lower limit of the heat pump setpoint with inlet adjustment	
0	expressed in degrees centigrade	39.13
HL u	The submask is used to set the upper limit of the heat pump setpoint with inlet adjustment	
0	expressed in degrees centigrade	39.14
LL u	The submask is used to set the lower limit of the heat pump setpoint with outlet adjustment	
0	expressed in degrees centigrade	39.15
HL u	The submask is used to set the upper limit of the heat pump setpoint with outlet adjustment	
0	expressed in degrees centigrade	39.16

	OFFS	(Only in the quick mind adjustment mode). The submask is used to set the forced shutdown temperature in the chiller mode	
	4.5	expressed in degrees centigrade	39.19
	OFFu	(Only in the quick mind adjustment mode). The submask is used to set the forced shutdown temperature in the heat pump mode	
	51.0	expressed in degrees centigrade	39.20
	bAnd	(Only visible in the step adjustment mode). The submask is used to set the temperature adjustment band	
	0	expressed in degrees centigrade	39.21
	SEtU	The submask is used to enable setpoint variation	
	n	"N"= disabled, "Y"= enabled	39.24
	SEtt	The submask is used to set the setpoint variation signal type.	
	4 20	"4-20"= 4-20 mA	39.25
	SEtL	The submask is used to set the minimum variation, corresponding to the minimum signal	
	0	expressed in degrees centigrade	39.26
	SEtH	The submask is used to set the maximum variation, corresponding to the maximum signal	
	6.0	expressed in degrees centigrade	39.27
	P Pr	(if 2 pumps are present on the evaporator). The submask is used to set the pump control type.	
	AUtO	"AUTO"= automatic, "PMP1"= pump 1 only, "PMP2"= pump 2 only	39.32
	P On	The submask is used to set the minimum pump operation time when the unit is switched on	
	60	time expressed in seconds	39.33
	P OF	The submask is used to set the minimum pump switch-off time when the unit is switched off	
	60	time expressed in seconds	39.34
	PurL	The submask is used to enable demand limit	
	n	"N"=disabled, "Y"=enabled	39.35
	PurS	(If the "demand limit" parameter is enabled"). The submask is used to set the power limitation percentage in the chiller mode	
	50	value expressed in percent	39.36
	Puru	(If the "demand limit" parameter is enabled"). The submask is used to set the power limitation percentage in the heat pump mode	
	0	value expressed in percent	39.37
	dI 0	The submask is used to set the digital input for switching on/off the unit	
	n	"N"= disabled, "Y"= enabled	39.39
	dI 5	(Only if the "operating mode" parameter is set on the heat pump). The submask is used to enable the digital input for the chiller/heat pump modes	
	n	"N"= disabled, "Y"= enabled	39.40
	bAnd	The submask can be used to enable time bands	
	n	"N"= disabled, "Y"= enabled	39.41
	SEr	The submask is used to enable the supervisor	
	n	"N"= disabled, "Y"= enabled	39.42
	PrOt	(If the "supervisor" is enabled). The submask is used to set the communication protocol.	
	nOdb	"MODB"= modbus, "LON"= lonWorks, "STD"=standard Carel	39.45
	bAUd	(If the "supervisor" is enabled). The submask is used to set the speed of communication expressed in bauds	
	1200	Possible values: "1200"-"2400"-"9600"-"19,2"=19200	39.46
	Id	(If the "supervisor" is enabled). The submask is used to set the identification n° for communicating in the supervisor network	
	0	address	39.47
	SU 0	(If the "supervisor" is enabled). The submask is used to set on/off from the supervisor	
	n	"N"= disabled, "Y"= enabled	39.43
	SU n	(If the "supervisor" is enabled). The submask is used to enable the operating mode as supervisor	
	n	"N"= disabled, "Y"= enabled	39.44
	PASS	The submask is used to set the user Password	
	0	from 0 to 9999	
CLH		Clock menu, not available on this keypad	
	nOnE		
I/O		Input/output menu	
	dI A	Displays digital input 1:4	
	CCCC	C=closed,A=open. XXXX=[input1][input2][input3][input4]	
	dI B	Displays digital input 5:8	
	CCCC	C=closed,A=open. XXXX=[input5][input6][input7][input8]	
	dI C	Displays digital input 10:12:00	
	CCCC	C=closed,A=open. XXXX=[input9][input10][input11][input12]	
	dI d	Displays digital input 13:15	
	CCC	C=closed,A=open. XXX-=[input13][input14][input15]	

dO A		Displays digital output 1:4	
	CAAA	C=closed,A=open. XXXX=[output1][output2][output3][output4]	
dO b		Displays digital output 5:8	
	CAAA	C=closed,A=open. XXXX=[output5][output6][output7][output8]	
dO C		Displays digital output 9:12	
	AAAA	C=closed,A=open. XXXX=[output9][output10][output11][output12]	
AI 1		Displays analogue input 1	
	18.1	value	
AI 2		Displays analogue input 2	
	17.9	value	
AI 3		Displays analogue input 3	
	25.3	value	
AI 4		Displays analogue input 4	
	30.2	value	
AI 5		Displays analogue input 5	
	24.5	value	
AI 6		Displays analogue input 6	
	24.5	value	
AI 7		Displays analogue input 7	
	0	value	
AI 8		Displays analogue input 8	
	0	value	
AO 3		Displays analogue output 3	
	70	value expressed in Volts	
AO 4		Displays analogue output 4	
	80	value expressed in Volts	
SEtP		Setpoint menu	
nOdE		The submask is used to set the operating mode (this depends on the machine type set in the manufacturer menu using the W3000-compact keypad)	
	CH	"CH"= Chiller, "HP"= heat pump	43.01
ACt		The submask displays the percentage of active power of the thermoregulator	
	50	value ranging from 0 to 100	
SUn		(If the FLOW parameter in the user menu is set to inlet). The submask is used to set the chiller setpoint with inlet adjustment	
	11.0	expressed in degrees centigrade	43.02 43.03
SUn		(If the FLOW parameter in the user menu is set to outlet). The submask is used to set the chiller setpoint with outlet adjustment	
	9.5	expressed in degrees centigrade	43.05
uIn		(If the FLOW parameter in the user menu is set to inlet). The submask is used to set the heat pump setpoint with inlet adjustment	
	0	expressed in degrees centigrade	43.04
uIn		(If the FLOW parameter in the user menu is set to outlet). The submask is used to set the heat pump setpoint with outlet adjustment	
	0	expressed in degrees centigrade	43.06
Unit		Unit menu	
EUIn		Displays evaporator inlet temperature	
EU01		Displays evaporator 1 outlet temperature	
EU02		(If evaporator 2 is present). Displays evaporator 2 outlet temperature	
CdIn		(In water-water units, if the condenser inlet probe is enabled). Displays condenser inlet temperature	
Cd01		(In water-water units, if the condenser outlet probe is enabled). Displays condenser outlet temperature	
Cd02		(In water-water units with two condensers, if the condenser 2 outlet probe is enabled). Displays condenser 2 outlet temperature	
EHt		(In water/air units, if the external air temperature probe is enabled). Displays external temperature	
OPt		(In water-air units, if the operational temperature probe is enabled). Displays optional temperature	
HP1		Displays circuit 1 high pressure	
	0	high pressure value	
HP2		Displays circuit 2 high pressure	
	0	high pressure value	
AO 3		Displays value of analogue output 3	
	0	value expressed in percent	
AO 4		Displays value of analogue output 4	
	0	value expressed in percent	
HH 1		Displays compressor 1 operating hours expressed in thousands	
	1	e.g.: "1"=1000 hours	

LH 1	Displays compressor 1 operating hours expressed in units	
50	e.g.: "50"=50 hours	
HH 2	Displays compressor 2 operating hours expressed in thousands	
1	e.g.: "1"=1000 hours	
LH 2	Displays compressor 2 operating hours expressed in units	
50	e.g.: "50"=50 hours	
SEL1	Enables compressor 1	
n	"N"=deselected, "Y"= selected	47.05
SEL2	Enables compressor 2	
n	"N"=deselected, "Y"= selected	47.06
CR11	Software release	
r.03	Software revision	
no A	No alarm active	

SYMBOLS
The following symbols are used in the W3000 and W3000 compact masks.

Flashing items on main mask	Description
Bands	Time bands active
Fcool	Unit in free-cooling mode
Limit	Power limit active (demand limit)
Freeze	Outlet temperature approaching anti-freeze setpoint

	Unit menu symbol	Description
	Off	Unit/circuit off
	Ch nr	Chiller circuit not demanded by thermoregulator
	Ch	Chiller circuit demanded by thermoregulator
	Ch+R	Chiller circuit plus recovery demanded by thermoregulator
	Hp nr	Heat pump circuit not demanded by thermoregulator
	Hp	Heat pump circuit demanded by thermoregulator
	R nr	Recovery only circuit not demanded by thermoregulator
	R	Recovery only circuit demanded by thermoregulator
	Pd	Circuit in pump-down mode
	Defr	Circuit in defrost mode
	Drip	Circuit in drip mode

	Chiller symbol	Description
	chiller	Chiller

	Chiller+freecooling symbol	Description
	chiller	Chiller
	chiller+fc	Chiller plus freecooling

	Chiller+recovery symbol	Description
	chiller	Chiller
	chiller+rec	Chiller plus recovery

	Heat pump symbol	Description
	chiller	Chiller
	heat pump	Heat pump

	All-in-one symbol	Description
	auto	Automatic
	recovery	Recovery
	chiller+rec	Chiller plus recovery
	chiller	Chiller

	Heat pump with recovery symbol	Description
	summer auto	Summer automatic
	summer rec	Summer recovery
	summer ch+rec	Summer chiller plus recovery
	summer ch	Summer chiller
	winter hp	Winter heat pump
	winter rec	Winter recovery
	winter auto	Winter automatic